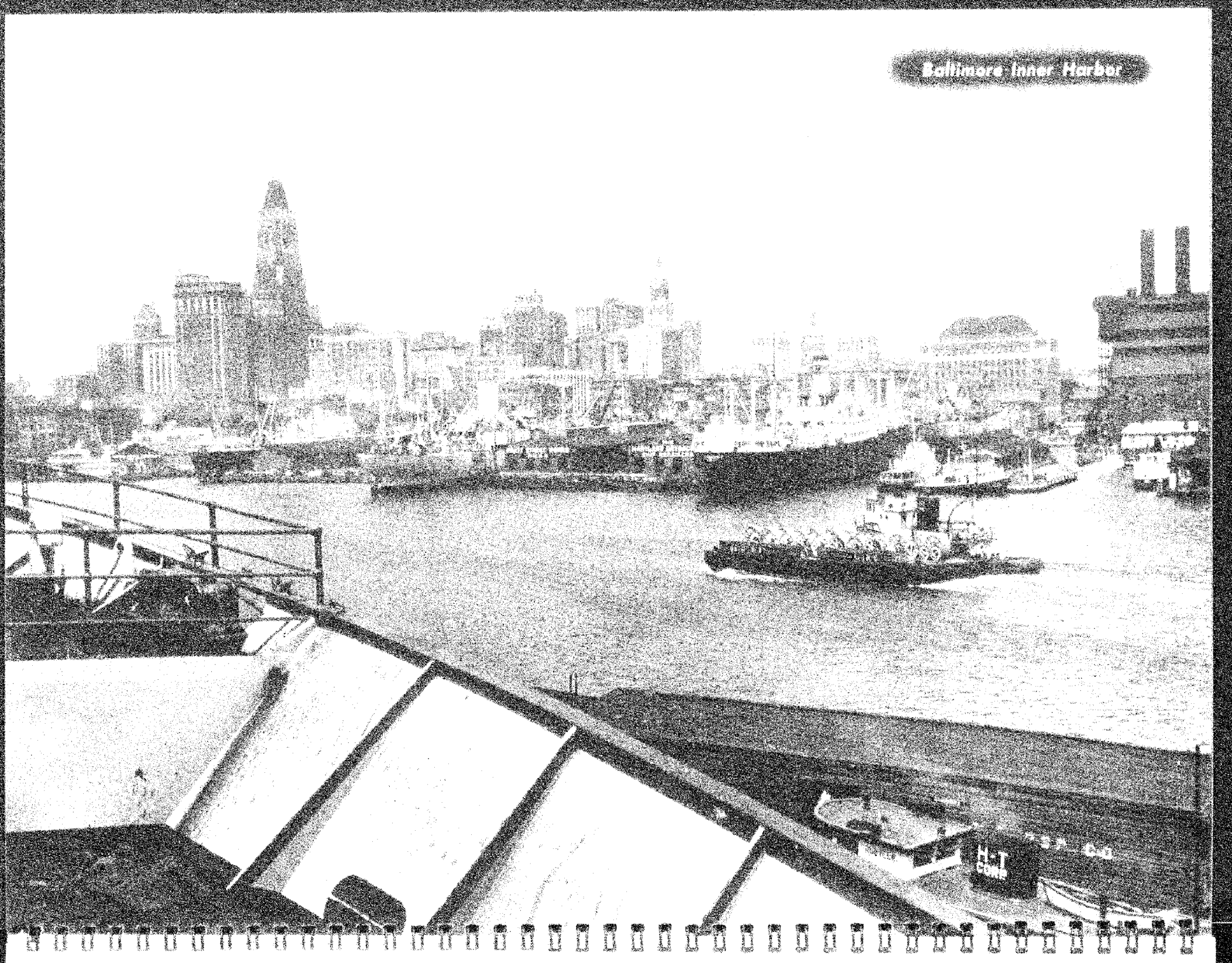
Baltimore Inner Harbor

Report on the Port of BALTIMORE

Volume I

PREPARED FOR THE

BALTIMORE ASSOCIATION OF COMMERCE

ON BEHALF OF THE

CITY OF BALTIMORE

AND THE

STATE OF MARYLAND

KNAPPEN TIPPETTS ABBETT ENGINEERING CO. • NEW YORK

STATE OF MARYLAND

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Governor

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December 31, 1949

Baltimore Association of Commerce
22 Light Street
Baltimore 2, Maryland

Gentlemen:

We submit herewith a report on our survey of the Port of Baltimore, the preparation of which was authorized by your letter dated May 26, 1949.

The survey was conducted under the direction of the Port Survey Committee of the Association of Commerce and embraced an investigation of conditions in the Port and a determination of the actions which we recommend to be taken to correct existing deficiencies in port facilities, services, operation and administration.

Under the auspices of the Port Survey Committee, joint meetings were held with railroads, truckers, steamship operators and others to develop their needs. One outgrowth of the joint meetings has been the recent establishment of a Port Dispatch Committee consisting of representatives of the Baltimore Association of Commerce, railroads, truckers, steamship companies and of port industries to resolve conflicts and misunderstandings and generally to further the development and improvement of the Port.

The port construction, operation and administrative duties now carried out by the State and City governments provide inadequate coverage of the needs of the Port and are so widely scattered among the

various governmental departments and bureaus that there is a lack of unified direction. Accordingly the establishment of a Port District Commission is recommended to supersede many of the governmental bodies now having responsibilities in the Port.

The Port of Baltimore has been developed to its present eminent status largely under the impetus of private enterprise. Although some deficiencies have been revealed in this study, nothing in our recommendations is intended to interfere in any way with the exercise of private initiative in the future development and operation of the Port. However, being mindful of the general public interest in the Port, we recommend that the Port District Commission should be empowered to supplement the endeavors of private enterprise and to act where the well-being of the Port is jeopardized by the inability or unwillingness of private agencies to venture capital improvements and additions.

The port promotional work of the Baltimore Association of Commerce is designed to meet all of the promotional and business solicitation requirements of the Port. The continuation and full support of the excellent port promotional activities of the Association is recommended.

General cargo is being hauled each year to a greater extent by trucks within the Baltimore tributary area. The general cargo handling facilities of Baltimore's piers are generally adequate for railroad delivery, but are not designed for heavy truck receipts in most cases. The greatest need for pier improvement in Baltimore is therefore in facilities for truck receipt and delivery of general cargo.

The current street, highway and expressway programs of the City of Baltimore and the State of Maryland, which include a tunnel under the harbor, will be of material benefit to the Port and are endorsed. Supplementary road and street improvements in the waterfront area are recommended. These are needed particularly for truck access to the piers and therefore should be carried out concurrently with the improvement of piers, terminals and pierside warehouses.

The improvements recommended herein in piers, terminals, warehouses and other facilities and equipment for the economic and efficient movement of commerce contemplate the progressive expansion of the Port on the basis of a Master Plan of Development arranged in three stages:

Stage I would embrace the rehabilitation and improvement of existing facilities, particularly for the accommodation of trucks, to the immediate benefit of the volume of general cargo now coming into the Port, at an estimated cost of $18,600,000.

REPORT ON THE PORT OF BALTIMORE
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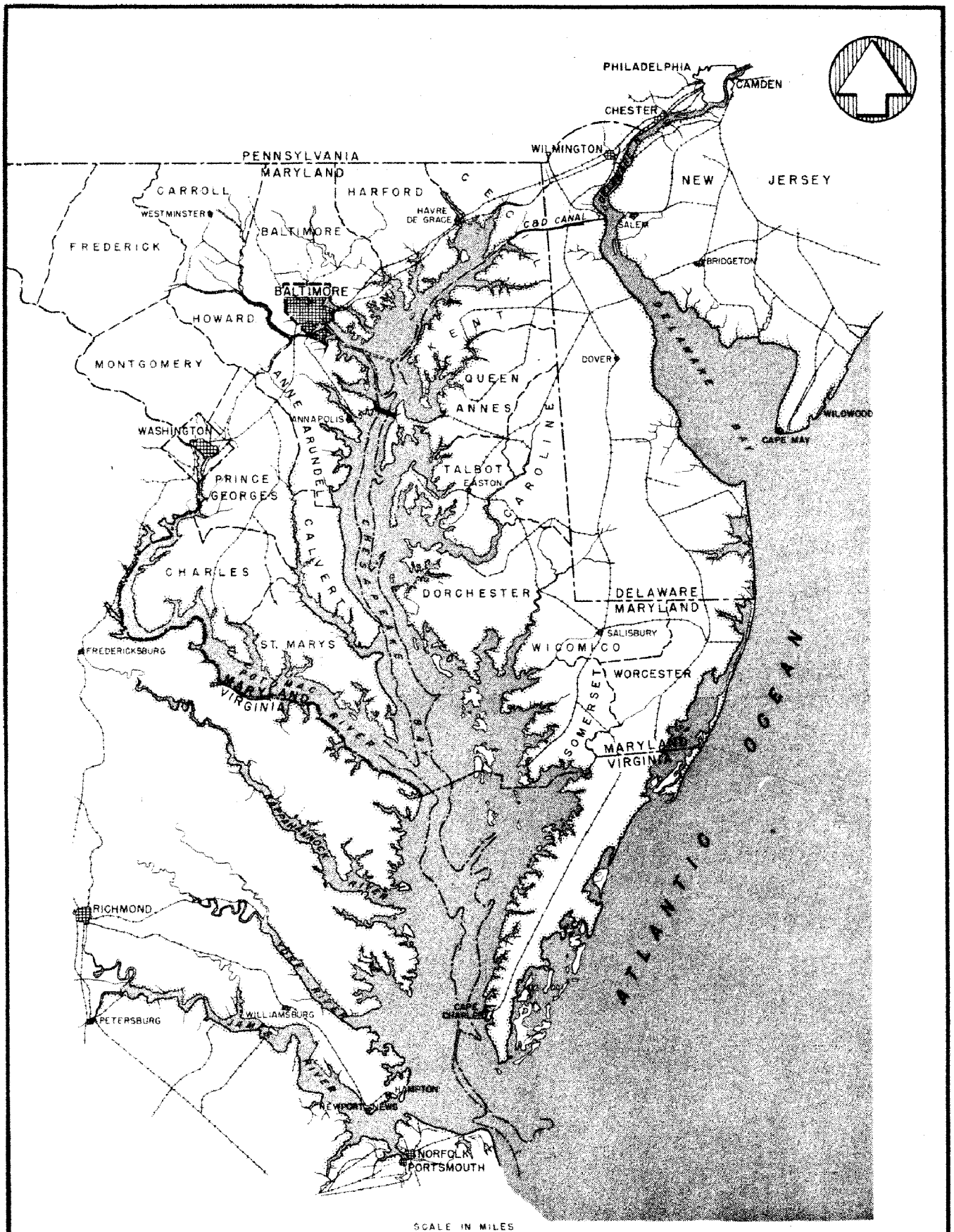
THE REPORT



THE PORT OF BALTIMORE

LOCATION MAP

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NEW YORK

DECEMBER 1949 PLATE I

Report on the Port of Baltimore

GENERAL DESCRIPTION OF THE PORT

1. **Location of the Port.**—Baltimore is one of the five major North Atlantic ports of the United States. Its central location on the Patapsco River about fourteen miles upstream from Chesapeake Bay gives it a significant advantage over Boston, New York and Philadelphia in ocean distances to the Gulf Ports and the Panama Canal. The Ports of Baltimore and Philadelphia are approximately the same distance from Europe and the Caribbean ports; however, the Port of New York holds an advantage over Baltimore with respect to distance to Europe and the east coast of South America.

2. **Channels and Anchorages.**—The navigation channels in the approaches to the Port of Baltimore are generally adequate for present needs. The Corps of Engineers is currently considering improvements in Baltimore Harbor and its approach channels to provide for the larger vessels now being widely used in the commercial fleet.

Anchorage areas have been established within the harbor to accommodate eleven vessels up to 35-foot draft, and an extensive auxiliary deep-water anchorage area is located in Chesapeake Bay about 22 miles below Baltimore. Anchorages for a large number of vessels drawing less than 24 feet are provided within the harbor.

3. **Port Facilities.**—There are 270 piers, wharves, and docks in Baltimore Harbor having berthing depths up to 50 feet; of these, 34 berths are suitable for modern deep draft general cargo vessels. Most of the important terminals are owned and operated by the railroads serving the Port.

Cargo hoisting facilities at the Port include gantry cranes, railroad cranes, and both stationary and floating cranes. The capacities of the larger cranes range up to 50 tons except for one floating A-frame derrick which has a capacity of 150 tons.

Three grain elevators provide an aggregate storage capacity of 12,123,800 bushels and the Port coal tipples are capable of loading coal at the total rate of almost 7,000 tons per hour. A modern banana-import terminal, with berths for two vessels and serviced by electric banana unloaders and conveyor belts, is located in the Inner Harbor.

There are 35 storage warehouses with a total of 3,700,000 square feet of storage space located within one mile of the waterfront. Cold storage facilities are available in four of these warehouses and bonded storage space in ten others; there is also considerable bulk storage space located at various points near the waterfront.

Facilities for the construction, repair and outfitting of ships include two graving docks, seven floating drydocks and nine marine railways.

The Port's floating equipment consists of 75 tug boats, 235 lighters, barges and scows, 19 tank barges, 25 car-floats and 12 car-float bridges. There are also a number of floating derricks, coal bunkering machines, water-service barges and miscellaneous floating equipment for ship repairs.

In general, the existing floating equipment is adequate for the present needs of the Port except that the existing ice-breaker should be repaired and an additional ice-breaker provided. Lighterage equipment appears to be in excess at the present time but it is desirable that this equipment be kept available for use during emergencies and to furnish an inexpensive mode of transportation from ships tied up at deepwater piers to shallow water berths and industrial installations. During periods of peak traffic in the past there have been heavy demands on the Port's lighterage facilities and it probably will be desirable to expand these facilities progressively as port commerce increases.

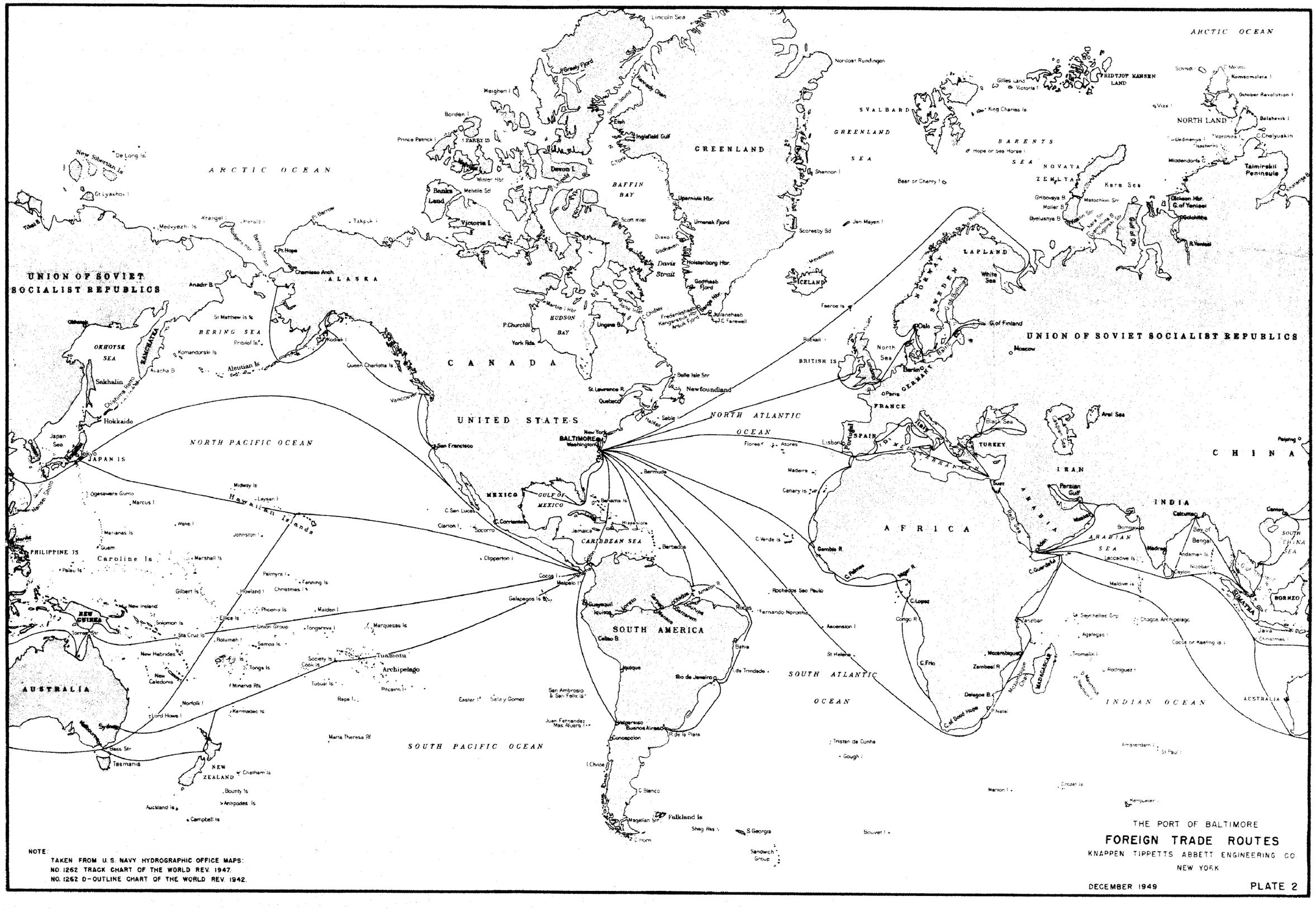
Commercial ship-to-shore telephone service is furnished by the American Telephone and Telegraph Company. The municipal radio station provides facilities for ship-to-shore radio communication. Radar control of vessels has recently been installed and is operated by the Harbor Bureau.

4. **Steamship Service.**—The Port's foreign trade is regularly served by 70 American and foreign flag steamship lines. Eleven shipping companies maintain intercoastal and coastwise service through the Port. None of the steamship lines, other than two local Bay lines and one foreign line, own, lease, or operate piers at the Port, the ownership of piers being largely by the railroads serving the Port. Two fruit companies lease and operate the fruit pier.

5. **Railroads.**—The Port of Baltimore is served by three trunkline railroads, the Baltimore and Ohio Railroad, the Pennsylvania Railroad and the Western Maryland Railway, which provide excellent service between Baltimore and all major points on the Atlantic seaboard north of the Potomac and in the region between the Atlantic coast and the Mississippi River, north of the Ohio River. Two other railroads, the Maryland and Pennsylvania Railroad and the Baltimore and Annapolis Railroad, have terminals in the city. Also serving the Port are two terminal lines, the Canton Railroad and the Patapsco and Back Rivers Railroad. The Municipal Harbor Belt Railroad operates within the area of the Inner Harbor.

All the railroad owned piers and most of the privately owned terminals are linked by rail to one or more of the systems described above.

6. **Motor Truck Transportation.**—There are about 140 common carriers providing Baltimore with over-the-road trucking facilities from point distant from the Port. Truckers maintain fast freight service from remote or isolated points to the waterfront and generally carry less-than-carload lots and types of freight which would otherwise require



NOTE:
TAKEN FROM U.S. NAVY HYDROGRAPHIC OFFICE MAPS:
NO. 1262 TRACK CHART OF THE WORLD REV. 1947.
NO. 1262 D-OUTLINE CHART OF THE WORLD REV. 1942.

THE PORT OF BALTIMORE

FOREIGN TRADE ROUTES

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

DECEMBER 1949

PLATE 2

special packing for rail shipments. Occasional bulk movements are accomplished by multi-truck loadings.

The private truck terminals now being operated in Baltimore are sufficient for present needs so that consideration of a union truck terminal may be deferred until the volume of truckborne commerce increases materially.

7. **Highways and Crossings.**—An expressway system is under development within the city to alleviate congestion on the city streets which provide the only means of truck access to the waterfront areas. A new Bay crossing is under construction which will relieve interurban north-south traffic while plans were made some time ago for a harbor crossing for city traffic. The street and highway programs of the City and State when carried to completion will facilitate the movement of truckborne commerce to the Port. Waterfront streets, however, are not in satisfactory condition for easy access by trucks to the piers.

8. **Petroleum Pipelines.**—Baltimore is a terminus for only one oil pipeline. This line conveys petroleum products from Philadelphia to storage tanks in Baltimore for distribution and consumption in that area.

9. **Airports.**—The Municipal Airport, situated on the waterfront south of Canton, accommodates both land and sea planes. A new international airport, furnishing modern facilities for both passenger and freight traffic, has recently been constructed southwest of Baltimore at Friendship Church.

10. **Population Growth.**—The present population of the City of Baltimore is estimated at approximately 970,000 persons while that of the Metropolitan District of Baltimore (as defined by the Statistical Section of the Baltimore City Health Department—Plate 3) is about 1,300,000 persons. All indications point to a continuous growth of population. It is estimated that the population of the City will increase to 1,125,000 persons and that of the Metropolitan District to 1,490,000 persons by 1980. (Chart 1.)

11. **Industry.**—Baltimore's industries enjoy the advantages of a stable supply of efficient labor, good transportation facilities, access to the sea through an excellent natural harbor, an abundant supply of power and a moderate, invigorating climate. Its leading industries are engaged in the manufacture of iron and steel products, shipbuilding, the processing of various foods and liquors, the manufacture of aircraft, machinery, electrical equipment, textiles, fertilizers, chemicals, paper and leather goods, and the refining of sugar, oil and various metals.

12. **Territory Tributary to the Port.**—A large portion of the export-import traffic of Baltimore is generated in the Central Freight Association and Trunkline Territories (Plate 4). The areas within which freight rate differentials on rail shipments are generally favorable to the Port of Baltimore include western Maryland, western Pennsylvania,

northern Virginia, West Virginia, Ohio, Michigan, Indiana and a large part of Illinois. The Port of Baltimore is in a good competitive position, relative to other major ports, in areas extending into Missouri, Iowa, Minnesota and lower Canada.

Favorable freight rates do not alone bring business to a port. In the Central Freight Territory, the industrial heart of the nation, there is intense and continuous competition between the Ports of Baltimore, Philadelphia, New York, Boston, Norfolk, New Orleans, Houston and others for waterborne commerce. It is necessary, therefore, that the administration, operation, management and services of Baltimore be capable of meeting this competition.

PRESENT AND PROSPECTIVE COMMERCE THROUGH THE PORT

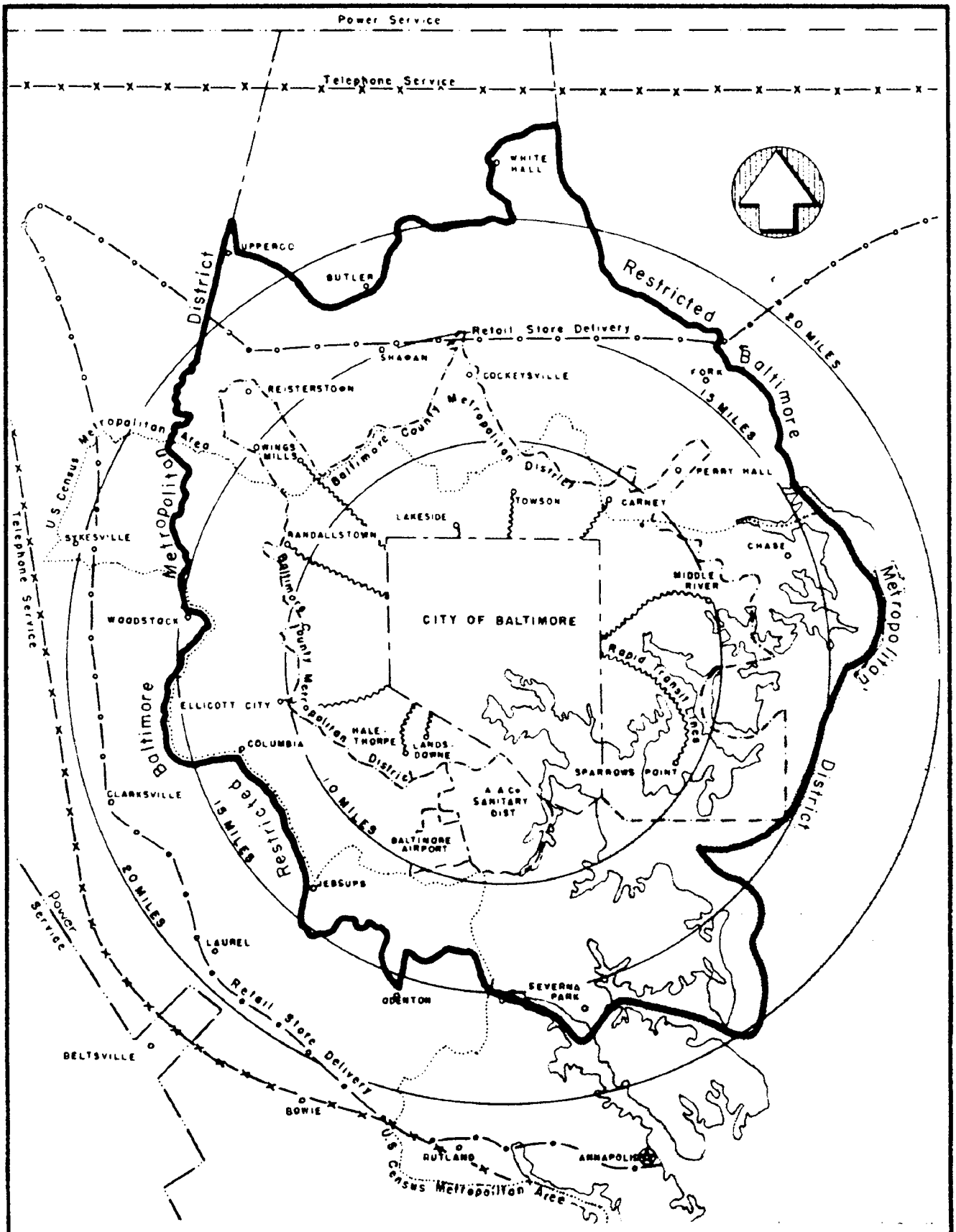
13. **Trends of Commerce.**—The North Atlantic Ports serve an extensive region of the United States having widespread activities in manufacturing, mining and agriculture, and which produces a large part of the nation's foreign commerce. Baltimore's geographical and rail advantages have helped to create and insure its standing as a leading port for this tributary area but its advantages have been attractive chiefly to the bulk cargo trade. The shipment of general cargo through the Port of Baltimore has been less than might reasonably have been expected. An analysis of the past commerce of the Port reveals trends of both bulk and general cargo trade which are helpful in estimating the prospective commerce of the Port.

Traffic through the Port of Baltimore has in general reflected the experience of the country as a whole. The volume of the waterborne commerce of the United States and Baltimore is shown on Charts 2 and 3. The effects of the world-wide depression of the 1930's and of World War II and its aftermath on the Port of Baltimore were similar to those on the entire country. As a leading United States port, Baltimore will continue to react to world economic conditions.

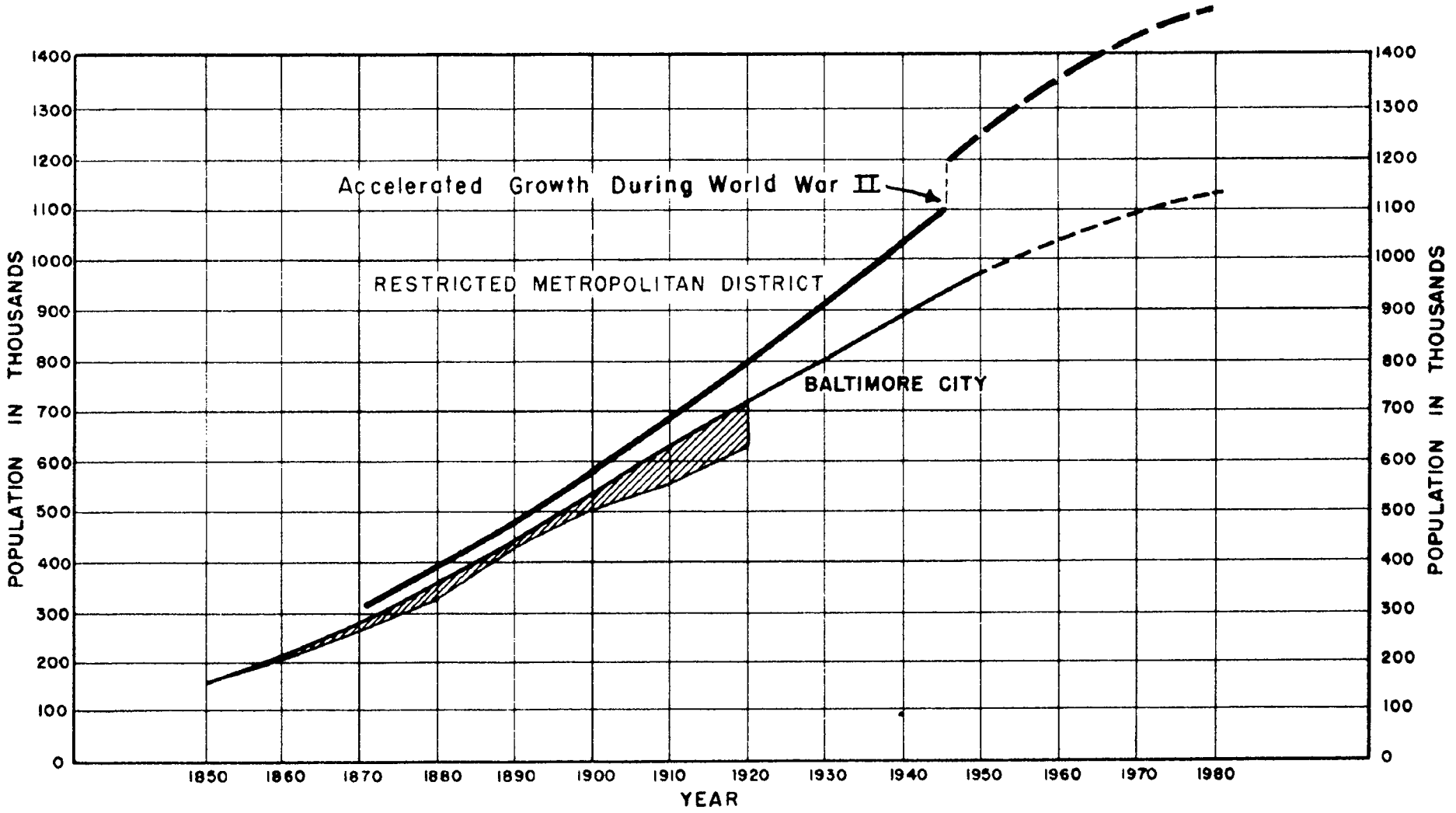
14. **Total Waterborne and Foreign Commerce.**—Charts 4 through 8 show the commerce through the Port of Baltimore as related to Boston, New York, the Delaware River ports, Norfolk and New Orleans.

The trend of total waterborne commerce at Baltimore has been slowly upward since the low period following World War I and in 1947 this Port ranked among the highest.

Total foreign commerce at Baltimore decreased from 1920 until the outbreak of World War II when it experienced an appreciable gain. This upward trend has continued since the war, reaching a record high point in 1947. For the past few years, Baltimore has been the second highest port in the country in volume of foreign commerce handled.



THE PORT OF BALTIMORE
RESTRICTED BALTIMORE
METROPOLITAN DISTRICT
KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK
DECEMBER 1949 PLATE 3



NOTES:

CURVES SHOW TREND IN GROWTH AND NOT EXACT POPULATIONS.
SHADED AREA - IN 1918 THE CITY OF BALTIMORE ANNEXED PORTIONS OF BALTIMORE AND ANNE ARUNDEL COUNTIES.
DATA FROM STUDY PREPARED BY DEPARTMENT OF HEALTH, CITY OF BALTIMORE.

THE PORT OF BALTIMORE

TREND OF POPULATION GROWTH

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

DECEMBER 1949

CHART I

15. **Coastwise Commerce.**—Baltimore's coastwise trade, including intercoastal commerce, is less in volume than that handled at other North Atlantic ports. The total volume moving through Baltimore today is approximately equal to that handled in 1941 but the nature of the commerce has changed. Receipts of petroleum products now form a larger proportion of coastwise trade and miscellaneous and general cargo a smaller proportion. The outlook for further growth in the coastwise trade is good.

16. **Bulk Cargo.**—Bulk cargo is defined as that which does not require packing for shipment or is generally moved in large volumes. Grain, coal, petroleum, ores and metals, iron and steel products, fertilizers, molasses, sugar and lumber comprise the bulk cargo trade of the Port of Baltimore.

Except for the possibility of substantial increases in the imports of iron ore, increases in the movement of bulk products through the Port are expected to follow the general pattern of growth of population and industry in the area served by the Port. No major change in rail freight differentials which would affect bulk cargoes is anticipated. These cargoes are now in general decline from post-war peaks, and losses in the future for this type of commerce are expected to be general for all ports.

17. **Miscellaneous and General Cargo.**—Imports of miscellaneous and general cargo at Baltimore increased after World War II and reached a high in 1947. However, the general cargo percentage of the total imports has been less than that at most competitive ports.

Exports of foreign general cargo from Baltimore have reached quantities exceeding those of pre-war years but the recent trend has been downward, as at all ports. Of total exports, the percentage of general cargo has been lower than that at most competitive ports.

General cargo movement contributes to balanced port operations, improved steamship sailings and more direct services to foreign ports and is beneficial in many ways to port interests. The table on the following page shows the volume of miscellaneous and general cargo which has moved through Baltimore in the past few years. Although the trend of total foreign general cargo has been upward, volumes are still relativey small and every effort should be made to increase this type of traffic.

Substantial increases can be achieved only by obtaining greater quantities of the general cargo commerce generated within the highly competitive tributary area of the North Atlantic ports. This can be accomplished by attracting to Baltimore the general cargo which because of shorter rail and truck haul distances and more favorable freight rates, should logically move through Baltimore, but which for one reason or another is moving through other ports.

FOREIGN COMMERCE

PORT OF BALTIMORE

(net tons)

Year	IMPORTS		EXPORTS	
	Total	Misc. & General	Total	Misc. & General
1946	5,943,000	557,000	9,879,000	778,000
1947	8,599,000	2,038,000	15,819,000	1,617,000
1948	10,325,000	1,113,000	6,269,000	495,000

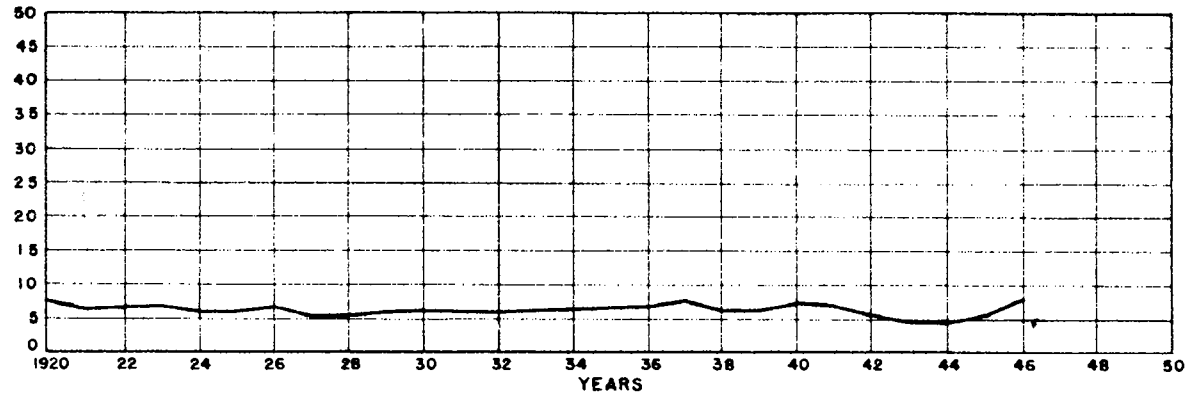
It has been estimated that there are being delivered annually to competitive ports about 2,800,000 tons of foreign general cargo which could be shipped through Baltimore with a resulting shorter rail haul and lower transportation cost. In addition to this freight there is a substantial tonnage of general cargo carried by truck past Baltimore to other ports. These volumes exemplify in part the additional commerce which could be acquired by Baltimore if facilities and services were made available to handle it efficiently and economically.

It cannot be expected that the entire quantity of freight cited here could be diverted to Baltimore but it is estimated that an additional 2,500,000 tons per year of general cargo commerce could be realized if proper action is taken to improve the physical facilities of the Port and if the administrative arrangements and the cost of freight handling, particularly for truckborne freight, are kept on a competitive basis with those in other ports.

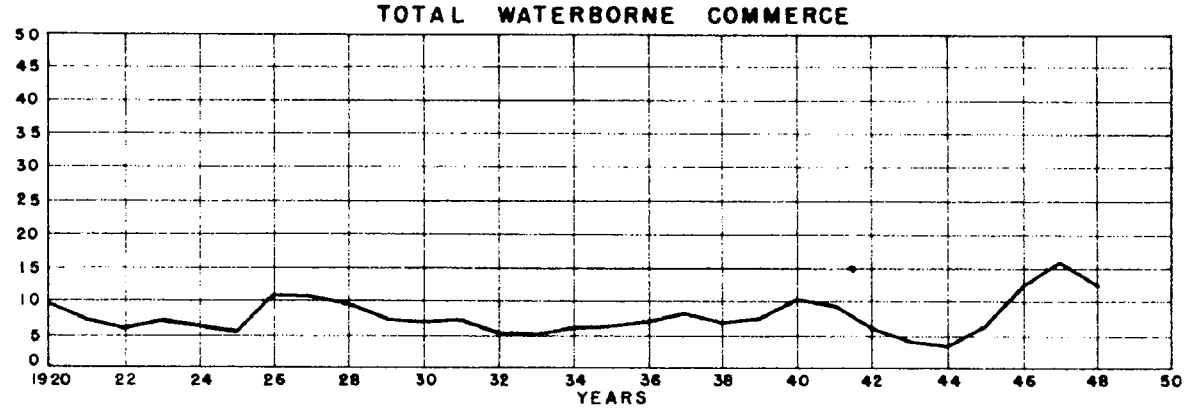
POTENTIAL ORE COMMERCE AND PROPOSED ORE TERMINALS

18. **Possible Expansion of Steel Industry in Baltimore.**—The importance of the steel industry to the economy of the United States is well recognized. The beneficial effects of the Sparrows Point Plant of the Bethlehem Steel Corporation on the City of Baltimore and the State of Maryland has been proven. Expansion of the steel industry and ore handling facilities in this area is desirable and under prevalent conditions is a distinct possibility.

19. **Sources of Ore.**—The Lake Superior region in 1947 supplied 82 per cent of the iron ore needs of the country. The balance came principally from the northeast and southeast sections of the country. The area west of the Mississippi accounted for only 4 per cent of the total ore in 1947. The growth of the iron and steel industries in Pennsylvania, Ohio, Indiana and Illinois is due to the proximity of these states

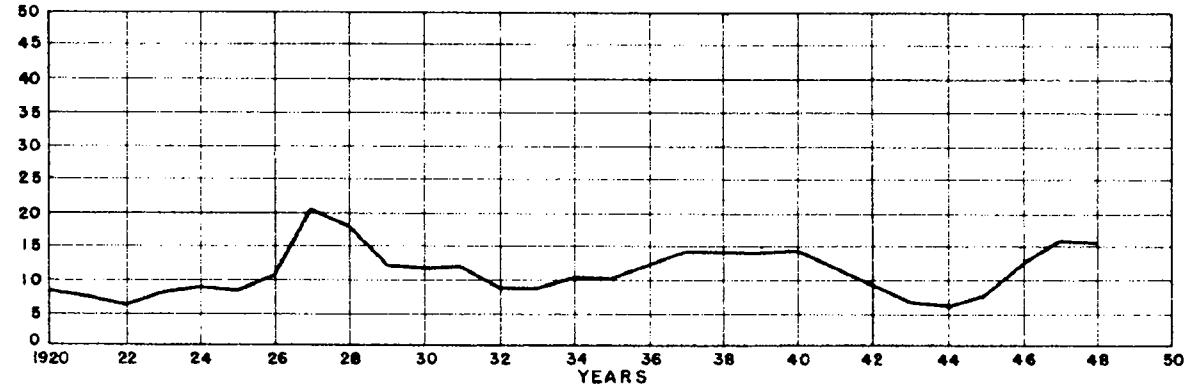


TOTAL WATERBORNE COMMERCE

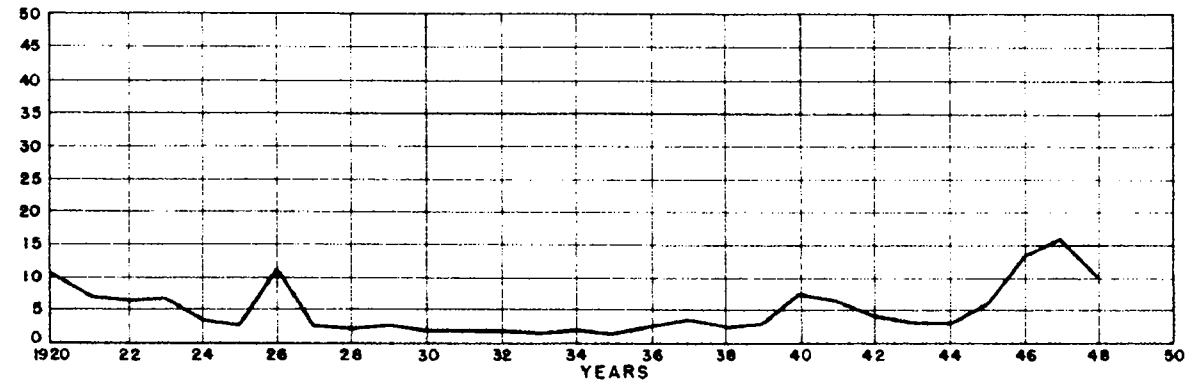


PERCENT

TOTAL FOREIGN COMMERCE



TOTAL IMPORTS



TOTAL EXPORTS

WATERBORNE COMMERCE 1920-1950
BALTIMORE COMMERCE
PERCENT OF TOTAL U.S. COMMERCE

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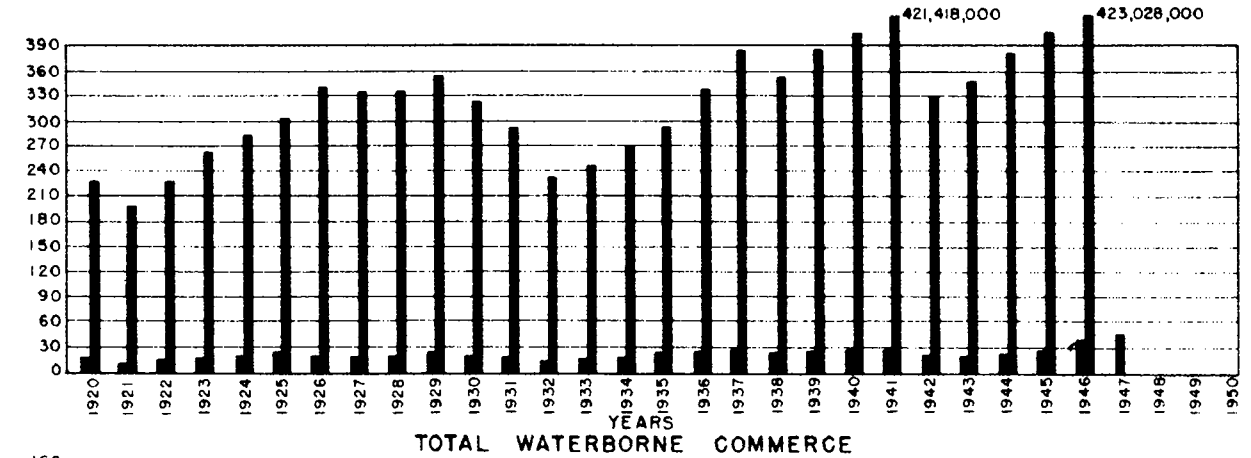
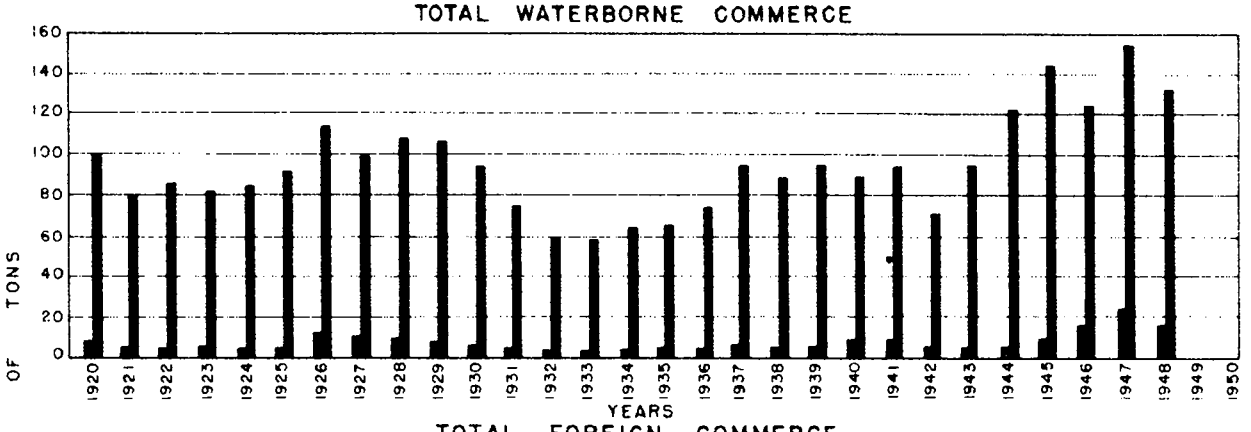
NEW YORK

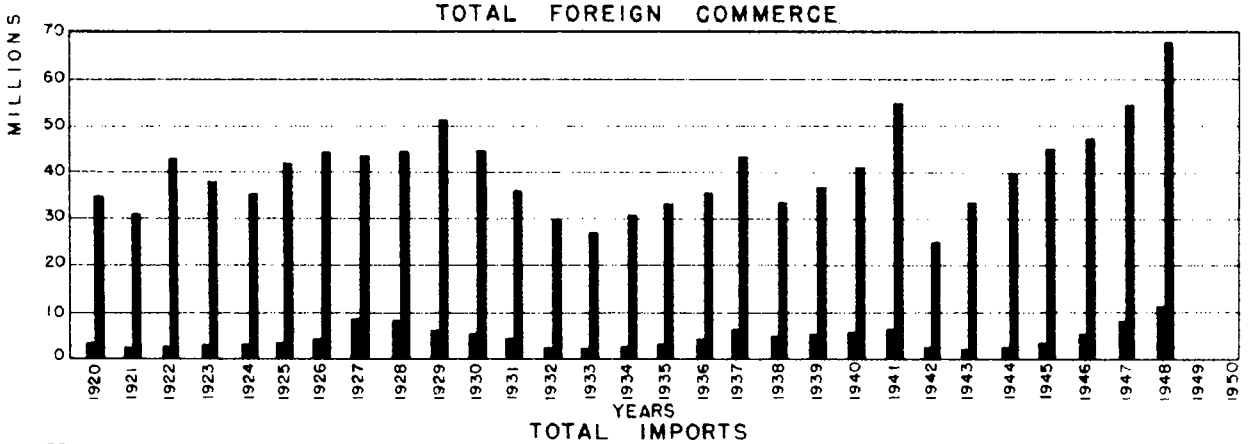
CHART 2



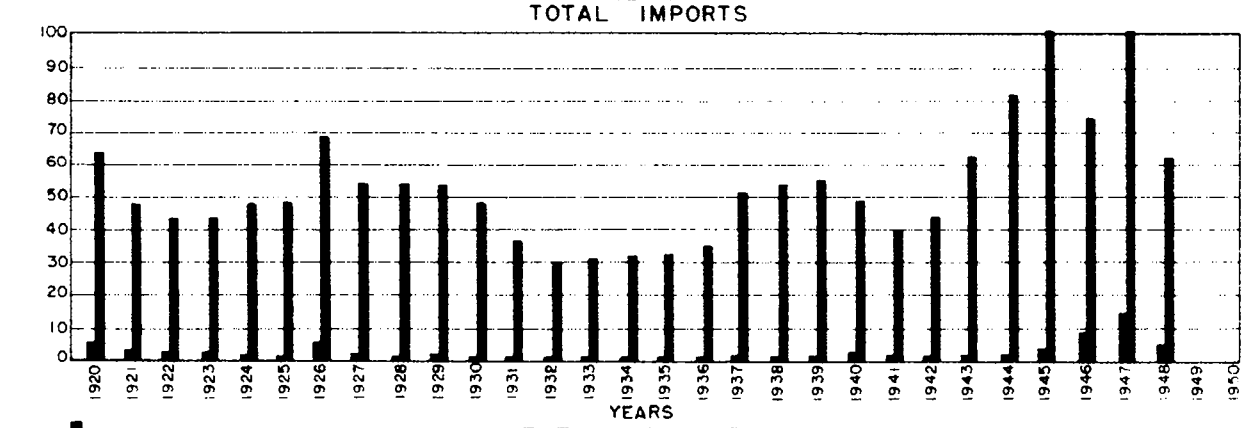
TOTAL WATERBORNE COMMERCE



TOTAL FOREIGN COMMERCE



TOTAL IMPORTS



TOTAL EXPORTS

BALTIMORE

UNITED STATES

WATERBORNE COMMERCE 1920-1950

BALTIMORE - UNITED STATES

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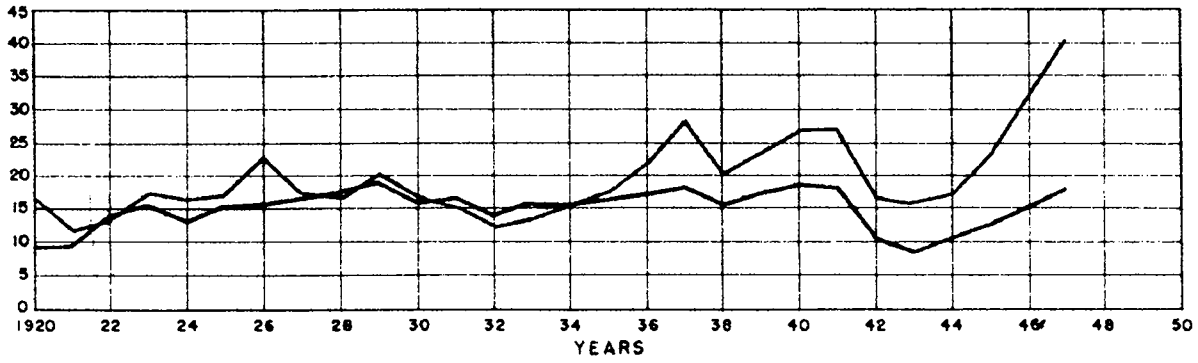
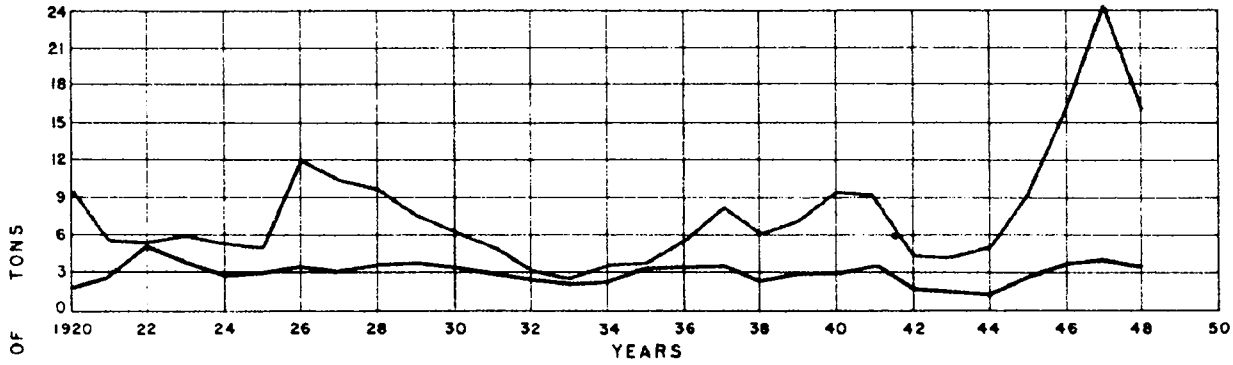
NEW YORK

CHART 3



TOTAL WATERBORNE COMMERCE



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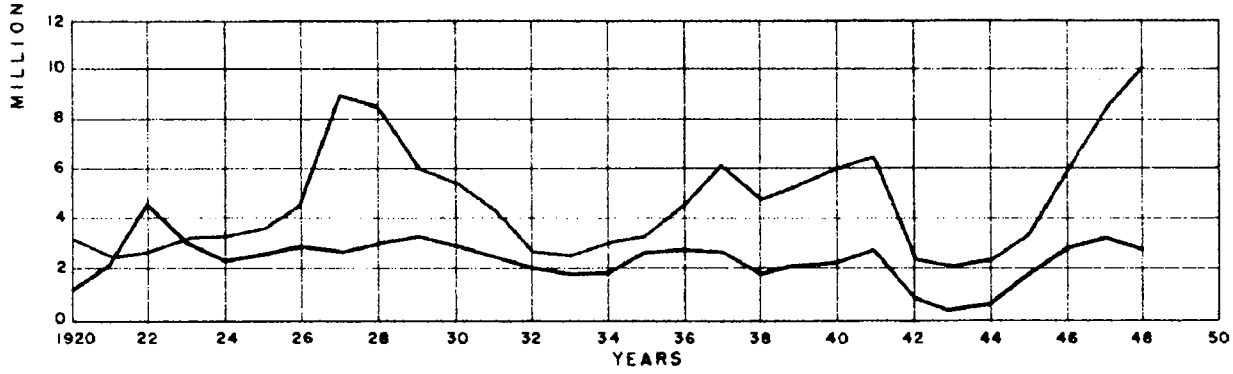

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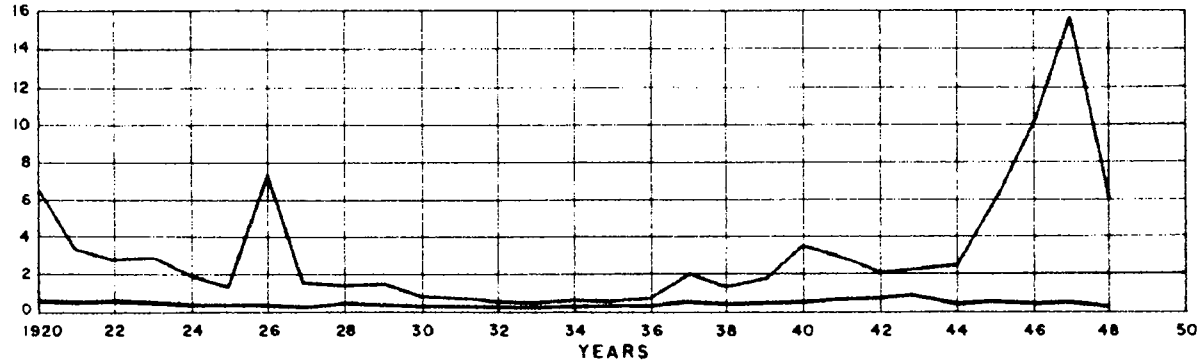

TOTAL EXPORTS

BALTIMORE

BOSTON

WATERBORNE COMMERCE 1920-1950

BALTIMORE - BOSTON

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
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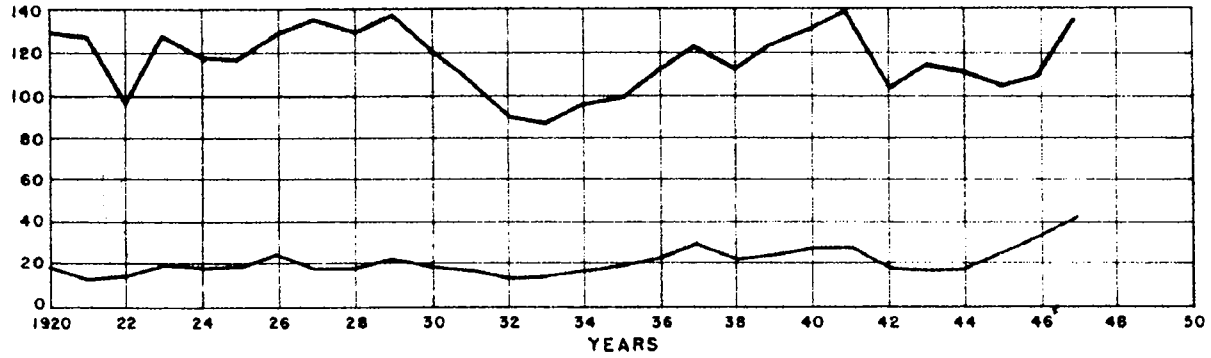
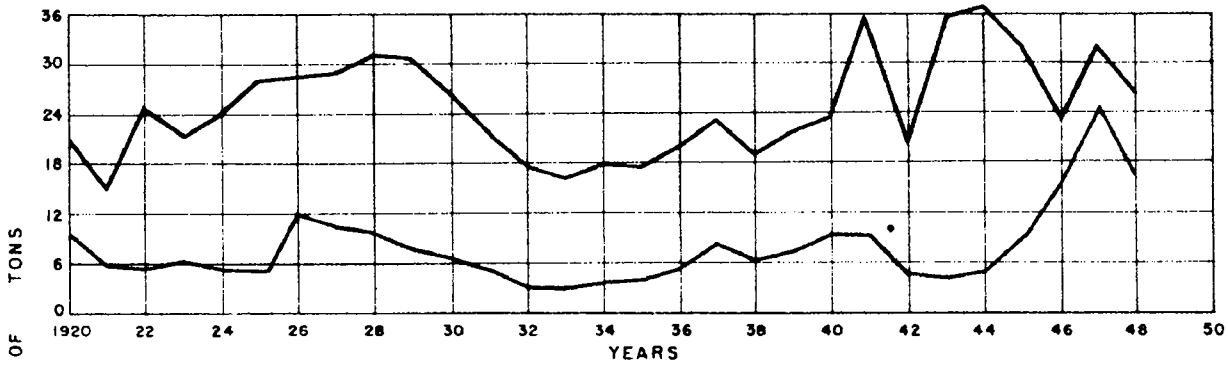
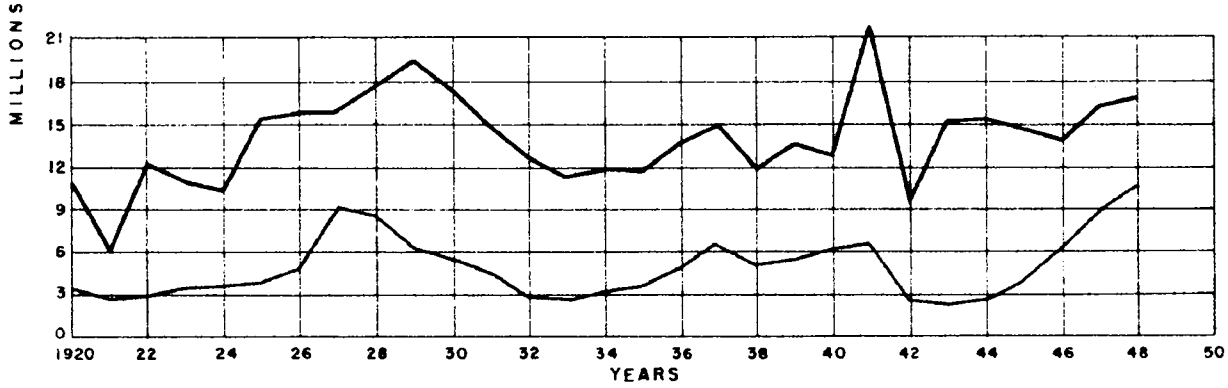
CHART 4



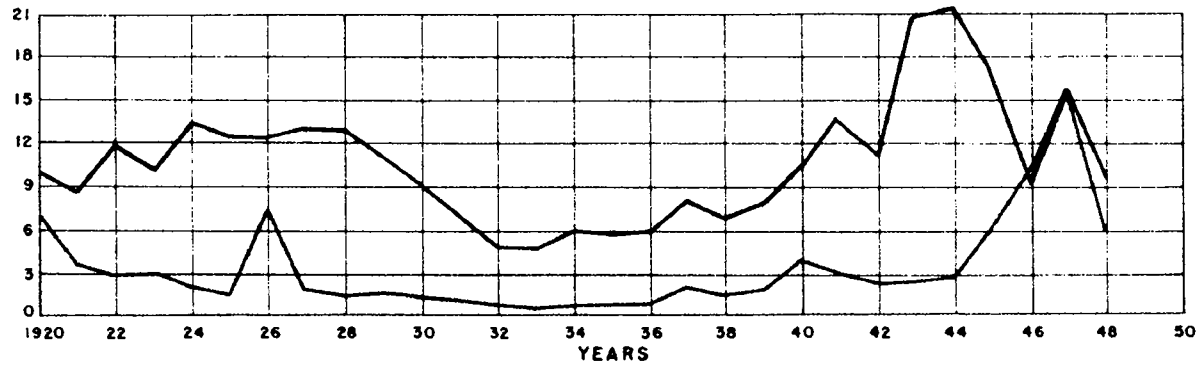
TOTAL WATERBORNE COMMERCE



TOTAL FOREIGN COMMERCE



TOTAL IMPORTS



TOTAL EXPORTS

BALTIMORE

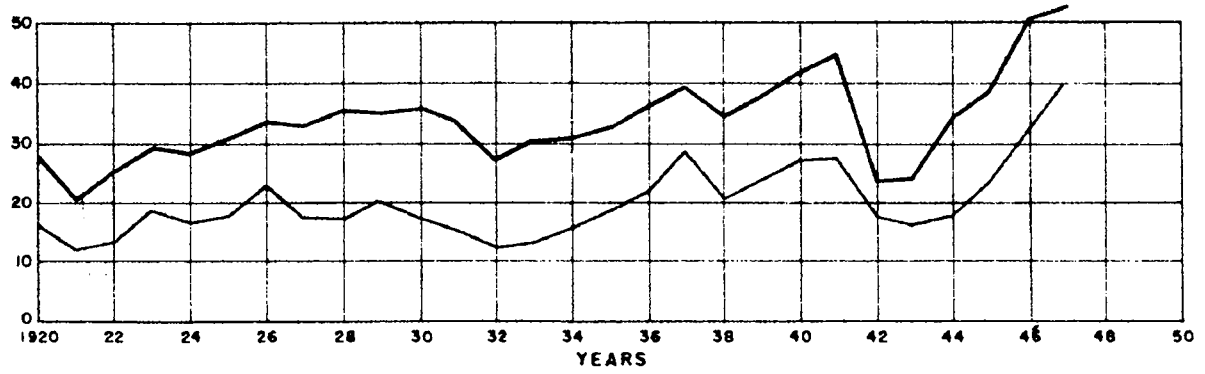
NEW YORK

WATERBORNE COMMERCE 1920-1950

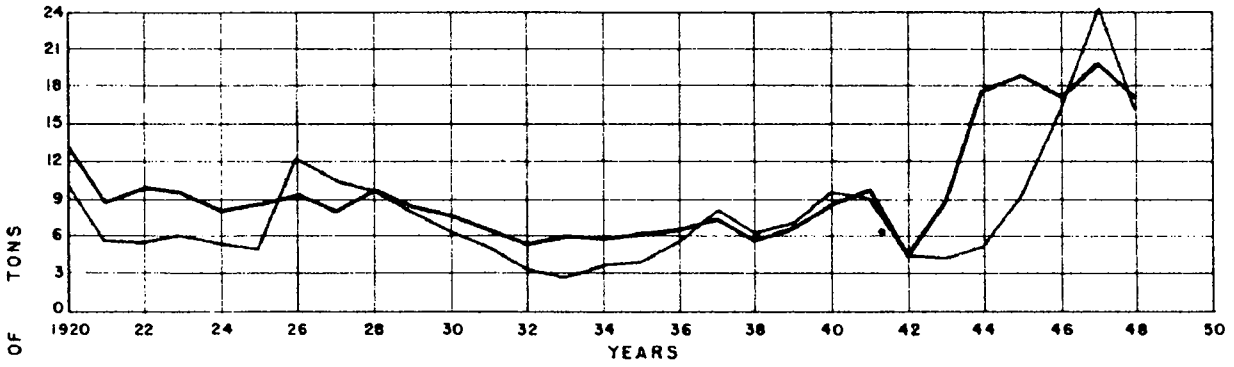
BALTIMORE - NEW YORK

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

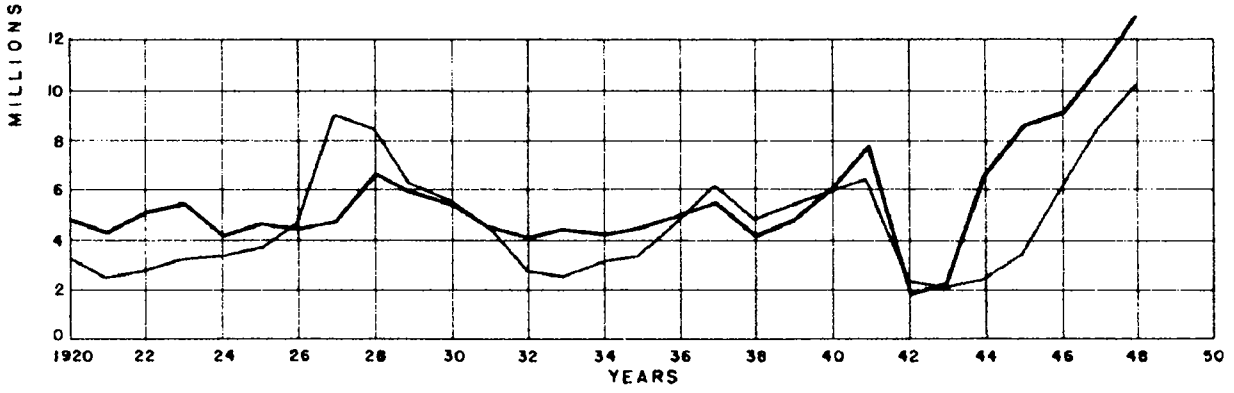
CHART 5



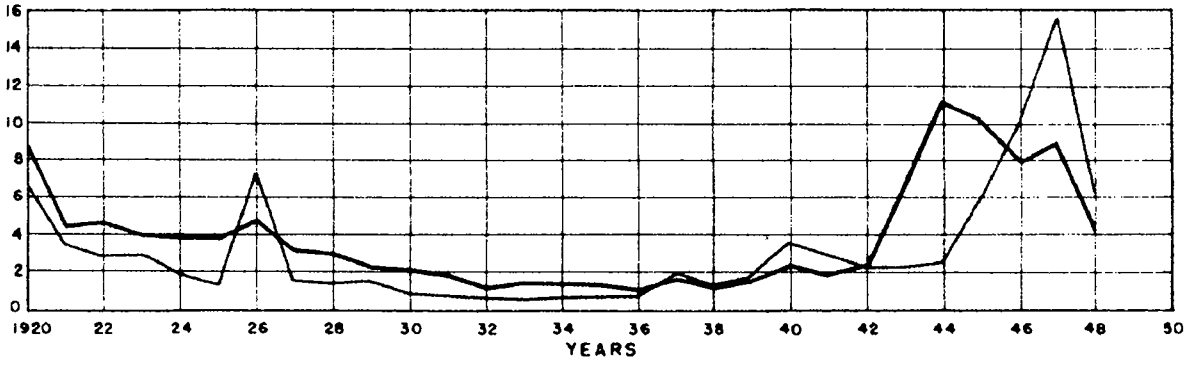
TOTAL WATERBORNE COMMERCE



TOTAL FOREIGN COMMERCE



TOTAL IMPORTS



TOTAL EXPORTS

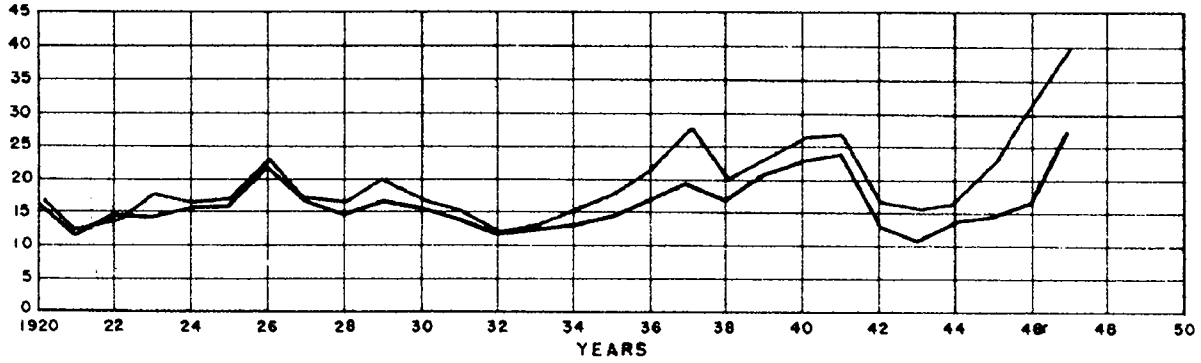
BALTIMORE

PHILADELPHIA

WATERBORNE COMMERCE 1920-1950
BALTIMORE-DELAWARE RIVER PORTS

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

CHART 6



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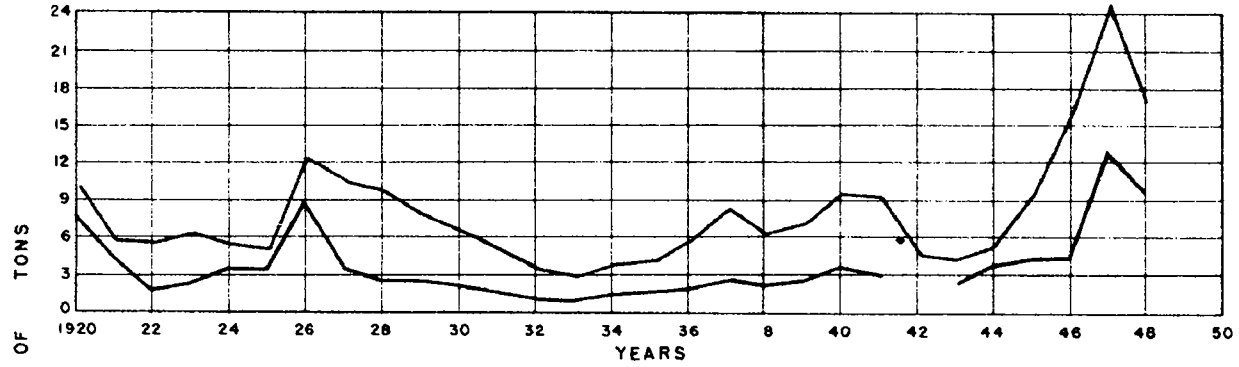
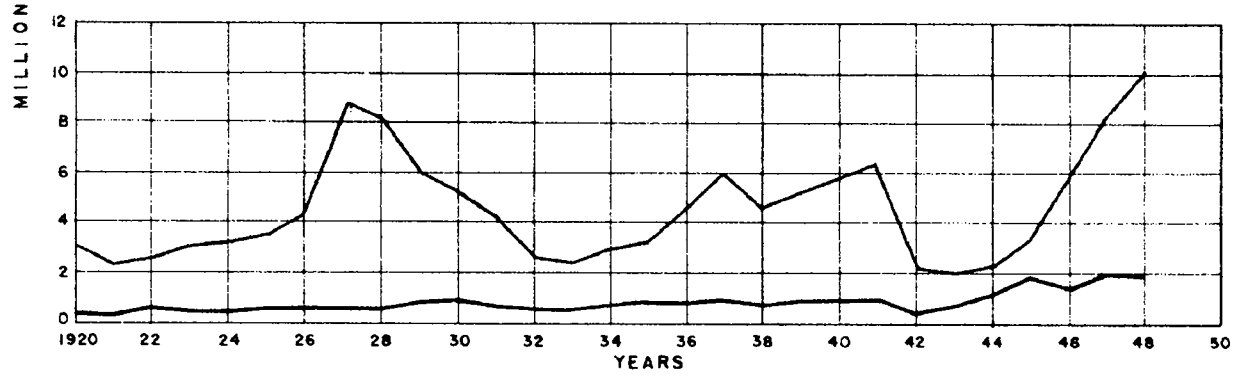


TOTAL FOREIGN COMMERCE



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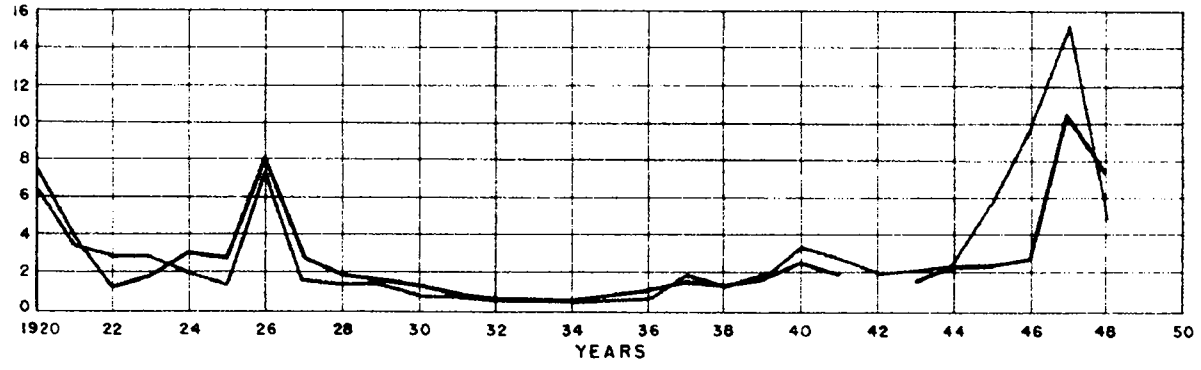


TOTAL EXPORTS

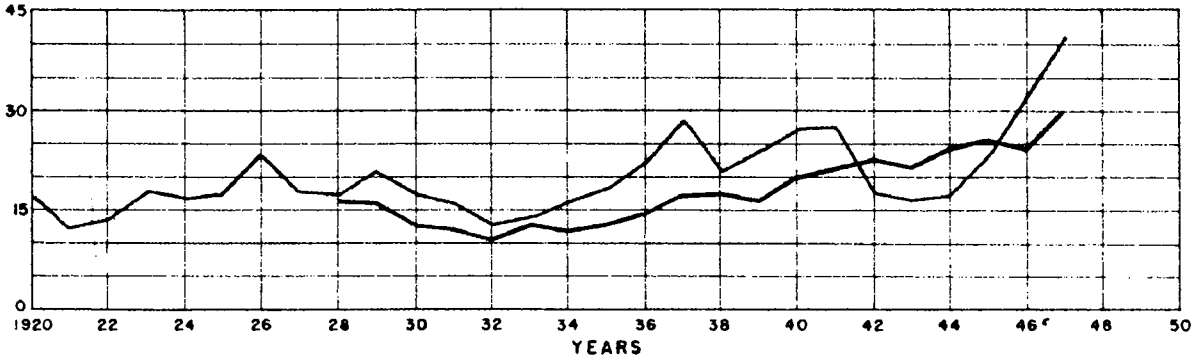
BALTIMORE

NORFOLK

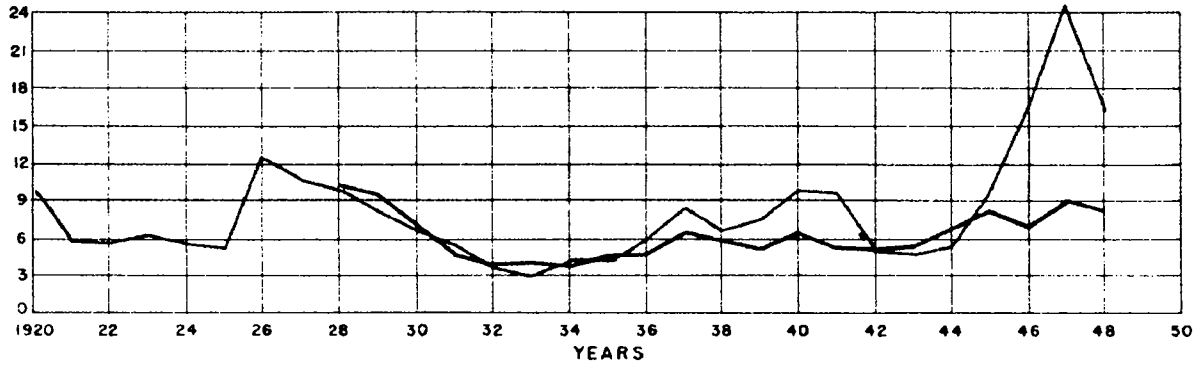
WATERBORNE COMMERCE 1920-1950
BALTIMORE - NORFOLK

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

CHART 7

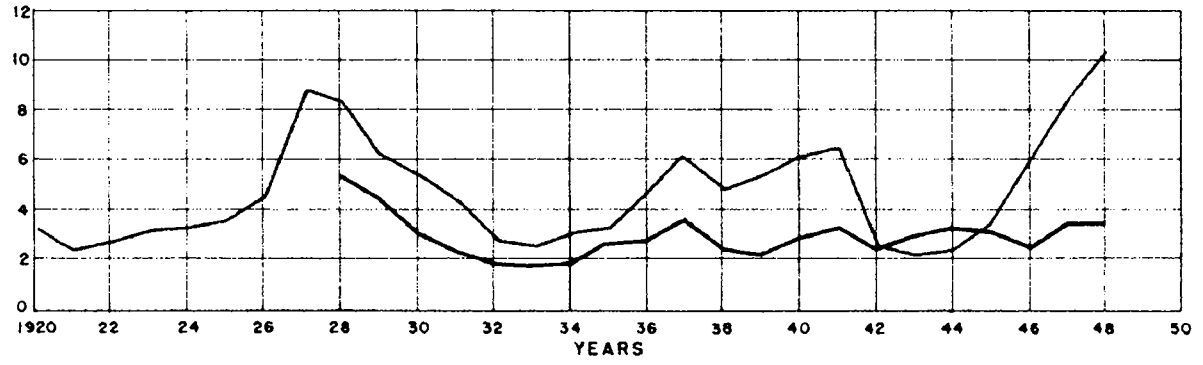


TOTAL WATERBORNE COMMERCE

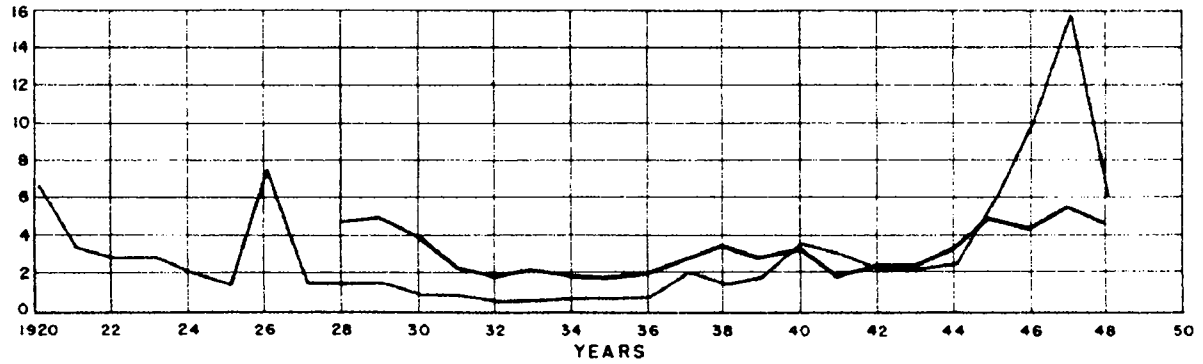


MILLIONS OF TONS

TOTAL FOREIGN COMMERCE



TOTAL IMPORTS



TOTAL EXPORTS

——— BALTIMORE

——— NEW ORLEANS

WATERBORNE COMMERCE 1920-1950
BALTIMORE - NEW ORLEANS

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

CHART 8

to the coal fields and to the fact that the ores could be cheaply transported via the Great Lakes to the centers of manufacture in these states. The servicing of the steel centers with ore will become a pressing problem unless other sources are found to replace the high quality Lake Superior ore which is becoming seriously depleted.

20. **Future Sources of Ore in the United States.**—Hematite ores now obtained from the Mesabi Range in the Lake Superior region have an iron content averaging 58.6 per cent. Supplementing the Mesabi Range ores are the high grade magnetites found in the Adirondacks which now are shipped to Buffalo, Bethlehem, Cleveland and Pittsburgh. It is possible that if the mines in the Adirondacks were more energetically developed they could supply a considerable part of the requirements of the east, but this is by no means assured.

With the exhaustion of the high quality Mesabi ores one source heretofore undeveloped is that of low-grade taconites found in the Lake Superior region. There are extensive deposits of taconites in this region. It has been estimated that the processes now under consideration for conversion of the taconites to usable ores will cost about $15 per ton. There seems little doubt that high grade ore deposits lying outside of the United States can compete in the future with the taconite ores.

21. **Foreign Sources of Ore.**—The principal known foreign sources of high grade iron ores are in Labrador, Venezuela, Brazil and Liberia. Deposits in Chile, Cuba and Mexico are also being investigated.

The cost of water transportation of foreign ores into the United States is expected to be low enough to admit high grade ores in competition with any low grade ore requiring extensive processing. This makes it necessary to consider how the Port of Baltimore may participate in any program of importing substantial quantities of foreign ore.

22. **Ore Terminal in Baltimore.**—The provision of one or more ore terminals in the Port of Baltimore will be necessary if the Port is to participate in the importation of foreign ores. Baltimore is well situated geographically both in relation to ore sources in foreign countries and with respect to the existing ore processing plants in the United States. The short rail distances to the steel mills, the favorable freight differentials and the fact that it is served by three major trunkline railroads places the Port in an excellent position to handle important tonnages of ore imports.

There are a number of suitable sites for ore terminals in Baltimore and deep water channels are available for large ore vessels. The Port Development Commission of the City of Baltimore is in a position to finance the construction of an ore terminal in the event that private capital for such an undertaking is not available.

If each of the major trunk line railroads were to construct an ore terminal in Baltimore, there would be a duplication of facilities. Such duplication might result

in one or more of the terminals being worked at less than capacity or even lying idle at times. The interests of the Port and of the railroads themselves clearly suggest that all interested agencies should join to provide a single ore terminal designed for access by all major railroads. If this were done the steel companies and, in the end, the consumers of steel products would benefit by the low operating costs that would result from a single terminal operating at full capacity. Nevertheless the interests of the Port would be served if the trunk line railroads should construct their own terminals.

23. **Advantages of Steel Industries With an Ore Terminal in Baltimore.**—The possibility of importation of ore through the Port of Baltimore suggests that steel plants might find it to their advantage to locate in the Baltimore area, thus saving the cost of rail movements from Baltimore to their existing plants. The close proximity of West Virginia coal mines would make the operation of steel plants in Baltimore practicable. Moreover, steel plants in Baltimore would be close to the eastern seaboard markets and in a position to export finished products at relatively low cost through the Port.

Efforts should be made by representatives of the railroads, the City of Baltimore and the State of Maryland to create in the Port of Baltimore a major terminal for ore imports and to induce the steel industry to locate mills in this area.

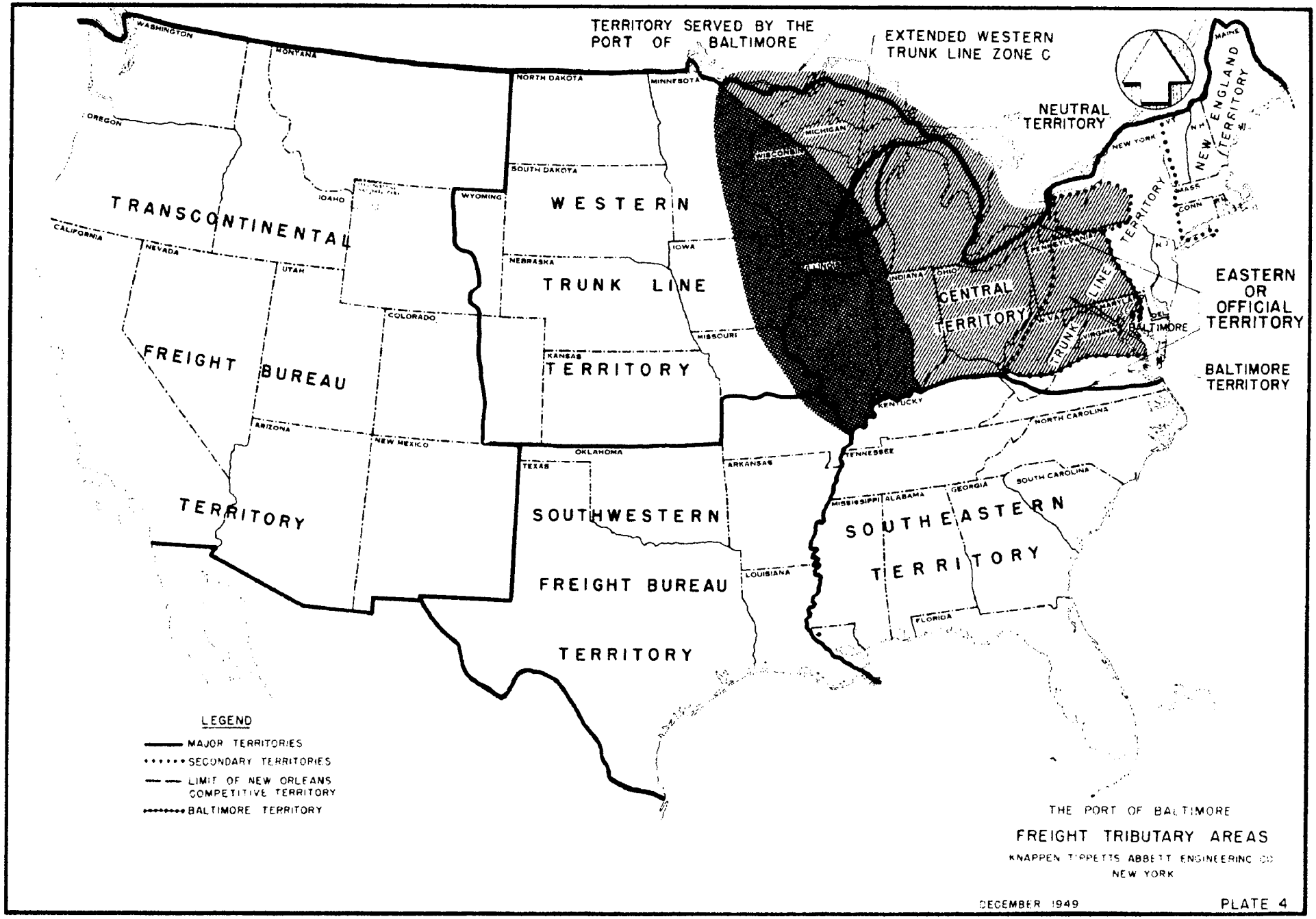
FREIGHT RATES AND PORT CHARGES

24. **General Freight Rate Structure.**—The rail freight rate structure in the United States was developed on a regional basis by the major railroads over a period of many years. The regional character of the rate structure is a product of the evolutionary development of the Freight Territories shown on Plate 4.

The rate system for rail haul is made up of both class and commodity rates which in turn are broken down into export-import and domestic rates. Line-haul freight rates are an important factor in influencing the flow of traffic through a port. In Baltimore the line-haul rates include the cost of switching (car interchanges), lighterage and other terminal charges as well as allowable free time storage for all line-haul rail freight. The rate structure is subject to the authority of the Interstate Commerce Commission.

As a result of agreements between water carriers, ocean rates generally have been equalized for all of the larger ports and they have little bearing on the competitive position of Baltimore in relation to other ports.

Rates for truck haul today generally are lower than rail rates. However, various additional charges in connection with trucking operations have a direct bearing on the cost of truck haul and tend to equalize rail and truck transportation costs in port operations. The volume of freight borne by truck is considerably less in Baltimore than that moved by rail. On the other hand the growth of general cargo freight is to a con-



THE PORT OF BALTIMORE

FREIGHT TRIBUTARY AREAS

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

DECEMBER 1949

PLATE 4

siderable extent dependent on truck deliveries and efficient and economical use of trucks in port movements of freight.

25. **Relationship of the General Freight Rate Structure to the Development of the Port of Baltimore.**—The Port of Baltimore is more advantageously situated to serve the Central Freight Territory (a sub-division of the Eastern or Official Territory) by rail than any other North Atlantic port. The Chesapeake and Delaware Canal has had the effect of overcoming to a large degree the handicap imposed by the geographic position of the Port with respect to ocean distances insofar as vessels having drafts of 25 feet or less were concerned. The deepening and widening of the Canal to accommodate larger vessels will result in further improvement of Baltimore's position in the movement of ocean freight.

The rail advantages of the Port and those resulting from the Chesapeake and Delaware Canal will be lost if the differentials in line-haul rates which now favor the Port are not retained. Other eastern seaboard ports are now undertaking to eliminate certain of the differentials which favor Baltimore. Rates to the Gulf ports, which for some commodities are lower than those to Baltimore, give them an advantage. This applies particularly to New Orleans.

The regularity and frequency of sailings also have an effect on the volume of commerce of a port. Despite the unfavorable rate differentials under which the Port of New York functions, it attracts a large part of the commerce moving through the eastern seaboard because of the excellence of its ship service.

26. **Freight Rate Differentials as They Affect Baltimore.**—The character of existing rail freight differentials as they affect Baltimore is illustrated in the tables on the following page.

It is apparent that Baltimore has an appreciable advantage in freight rates over Boston, New York, and Philadelphia for traffic originating in, destined for, or passing through the same territory. The differentials in commodity rates generally parallel the class rate differentials given in these tables, the exceptions being grain and grain products, differentials for which are less favorable to Baltimore.

New Orleans has a favorable rate differential over Baltimore in the Central Territory west of the line passing through Chicago, Indianapolis and Louisville on shipments to and from foreign ports in Europe, Africa and parts of South America for several classes of freight including grain.

Barge transportation on the Mississippi River, particularly that engaged in the haul of grain, adversely affects the Port of Baltimore as well as other ports. The ports so affected, including Baltimore, are now actively opposing further Federal subsidy for the Federal Barge Line.

DIFFERENTIALS UNDER CLASS RATES TO NEW YORK
(Cents per 100 lbs.)

	CLASS 1	2	3	4	5	6	
Boston	0	0	0	0	0	0	Imports and Exports
Philadelphia	6	6	2	2	2	2	Imports
	2	2	2	2	2	2	Exports
Baltimore and Norfolk	8	8	3	3	3	3	Imports
	3	3	3	3	3	3	Exports

DIFFERENTIALS: NEW ORLEANS LESS THAN BALTIMORE (Cents per 100 lbs.)

	CLASS 1	2	3	4	5	6
Import	10	10	9	5	3	3
Export	15	15	9	5	3	3

The rate differentials on foreign commerce apply also to intercoastal trade and to a considerable extent to coastwise trade. In recent years the increase in shipping costs have operated against combined rail-water movements with the result that all-rail movements are now to a large extent favored by shippers. This situation has adversely affected coastwise and intercoastal trade at the Port of Baltimore.

A large part of the freight which has been diverted from the Port of Baltimore as the result of the rate differentials favoring New Orleans moves on commodity rates. Since the Port of New Orleans competes in only about twenty percent of the Central Territory tributary to the Port of Baltimore, it is apparent that any attempt to reduce or eliminate the New Orleans differentials in this area would raise issues that might jeopardize the differentials which Baltimore now enjoys over the remaining eighty percent of the area.

The rate differentials favoring Baltimore have afforded it a considerable advantage in attracting bulk cargo. The effect, generally, of upward revisions in rail rates during the past years has been to divert a considerable volume of general carge haulage to trucks. In Baltimore the deficiencies in port facilities for handling truck borne cargoes have had the effect of handicapping the Port in obtaining its full share of this type of business.

Changes in the freight rate structure may be expected to result in the shift of certain cargo movements from one port to another but it is questionable whether any moderate changes in rates would alter materially the present trade relationship of the several ports. Therefore, reliance solely on revisions of rate structures to stimulate the port business in Baltimore is not justified.

27. **Port Charges at Baltimore.**

a. Split-Export-Car-Delivery By Rail.—Under this arrangement an exporter may assemble several shipments of less-than-carload lots and consign the shipment to different vessels within a port at the lowest freight rate which obtains for carload export movement. Limitations and conditions imposed in Baltimore now discourage this practice. The position of the Port for the handling of split-export-car-delivery could be improved if exporters were given the same privileges they now enjoy in competitive ports.

b. Switching Charges and Reciprocal Switching.—The exchange of cars between line-haul railroads serving Baltimore is now made at five traffic interchange points on the periphery of the Port. There is a prevalent opinion that the present methods of exchange are inadequate and inflexible and that cargoes often must be further handled in the port area by local switching or lighterage in order to reach the ships for which they are destined. Local switching of this type entails greater expense while lighterage has been criticized as involving extra handling and damage to freight. Lighterage is also said to have the effect of encouraging the railroads to concentrate their promotional activities on their own facilities, rather than in directing their efforts toward the over-all stimulation of port trade. Reciprocal switching within the Port area has been suggested as a remedial measure. The advantages to be derived from reciprocal switching would fall primarily to the Pennsylvania and Western Maryland railroads which have about 35% of the local trackage while the Baltimore and Ohio Railroad with 60% would benefit very little. Deficiencies in the rail network in the port area and other physical limitations would severely handicap reciprocal switching, add to the congestion within the port area and interfere seriously with vehicular traffic. For these reasons, reciprocal switching appears to be impracticable at the present. Also, there are other more pressing problems affecting the future of the Port which justifiably could be given priority over reciprocal switching.

c. Lighterage.—The costs of lighterage between rail-water terminals are included in the cost of line-haul movement of freight. For other than line-haul freight and for local water movement of freight, lighterage charges are assessed in accordance with standard tariffs.

d. Port and Terminal Charges.—Dockage and wharfage charges where assessed in Baltimore are generally in line with those at other ports. Top wharfage charges apply to cargoes delivered or picked up by truck and in the Port of Baltimore are comparable to those assessed at many of the piers in Philadelphia and Norfolk. The fact that top wharfage is not charged in New York City, gives that port an advantage over Baltimore. Nevertheless, conditions in the Port of Baltimore appear to justify the continuation of this charge for the present.

e. Towage and Pilotage.—Towage rates for docking are higher in Baltimore than in New York and Philadelphia. Likewise pilotage costs for large size vessels are higher in Baltimore than in the latter ports. However, these rates are not excessive and probably do not affect the choice of a port of call.

f. Handling Charges.—The term "handling" is loosely applied to various operations involved in the movement of freight across a pier. The railroads do not ordinarily charge for handling on their piers if the movement of the cargo by rail results in a payment of 19¢ per 100 lbs., or higher. Handling charges, when made, are based on standard tariffs. When freight charges are less than 19¢ per 100 lbs., the handling charges at railroad piers are assessed to insure that the total charges for rail movement plus handling equal this rate. Where no rail movement is invoved, a labor charge for handling, of $1.79 per ton, is made. This results in truckers being placed at a disadvantage since, under the Interstate Commerce Commission rules, this charge cannot be absorbed by truckers but must be passed on to shippers. Another charge may be made against shippers when lack of sufficient storage area on railroad piers and the inadequacy-of facilities for the rapid loading and unloading of trucks, results in delay and rehandling of cargo. This cannot be estimated in advance, with the result that shippers are often committeed to excess charges when their goods are moved by truck. The handling charges however are not sufficiently onerous to justify action to have them changed. It is the lack of adequate pier and access facilities and of proper administrative arrangements to avoid excess handling and delays which now handicaps truck-borne commerce in the Port of Baltimore. The most urgent need in the Port is the improvement of the physical facilities for truck movements in the waterfront area and on the piers. Administrative correctives to avoid delays and uncertainties in truck movements should also be undertaken.

The railroads in Baltimore do not absorb handling charges on railborne cargoes received at private piers even if line-haul revenue is paid although these charges are sometimes absorbed by railroads elsewhere. A request for equal treatment has been made in Baltimore. Either the absorption of this charge at private piers in Baltimore, or the adoption of uniform charges at all piers at all North Atlantic ports would prove an advantage to Baltimore.

28. **Free Time.**—In general, free time allowances for the storage on piers of cargo moved by rail are the same at all ports, that is, five days for inbound cargo and seven days for outbound cargo. Exceptions are made in the case of certain commodities. Grain, for example, is allowed ten days free time in New York and twenty days in Baltimore, Boston, Philadelphia and Norfolk. Free time at rail piers is established by the railroads with the approval of the Interstate Commerce Commission. At private and municipally owned piers, free time may be extended by the pier operator as desired.

Free time allowances on cargo moved by truck are generally less than those allowed rail-haul cargoes. In Baltimore, as in most other ports, the free time allowance at railroad piers to truckers is 48 hours. Free time allowances at other than railroad owned piers in Philadelphia and New York are greater which gives these ports a significant advantage over the Port of Baltimore. Limitations as to free time frequently result in overtime penalty charges which are a deterrent to the use of the Port of Baltimore by truck-hauled cargo. The fact that most of the general cargo piers in Baltimore are railroad owned results in a lack of a competitive stimulus to move truck-hauled general cargo freight within the period of allowable free time.

Such benefiits as can now be realized and those which will materialize with the improvement of the piers warrant immediate and energetic action to extend the free time for truck-hauled freight to a minimum of five days. However, this cannot produce material benefits until additional storage space on the railroad piers is provided.

There is evidence that an appreciable volume of export cargo moving by rail is being lost to Baltimore because of the inability of some shippers to complete their export cargo movements within the seven days free time allowed. Although the limited storage space on the piers will restrict the benefits derived from an extension of free time, considerable improvement would result if the allowance were increased.

NAVIGATION CHANNELS AND ANCHORAGES

29. **Existing Situation with Respect to Navigation Channels and Anchorages.**—The present channels and anchorges in the Baltimore Port are shown on Plate 5 which also gives the depths and other dimensions authorized by the Federal Government but on which work has not yet been completed. Within the outlines of the anchorage areas, the capacity in terms of ships which can be anchored is also given.

The 39-foot depth of the main channel from Chesapeake Bay to Fort McHenry when completed will be adequate for present requirements. When more frequent calls are made at Baltimore by vessels drawing more than 35 feet, the channel should be deepened. The present width of 600 feet within the Harbor does not permit easy maneuverability for large vessels and the hazard of grounding severely restricts the

speed of vessels. This is accentuated by the great number of cross channel movements of ships and small harbor craft as well as by the large vessels passing up and down the channel. For safe and expeditious movements of vessels the main channel should be widened to 800 feet.

The connecting channel from the main channel at the Brewerton-Cutoff Angle to the Inland Waterway is 24 feet deep and 400 feet wide. The relatively shallow depth reduces the speed of deep draft vessels while the narrow width makes passing of ships hazardous.

There are several anchorage areas in Baltimore Harbor, some of which are available for the unrestricted use of any vessels while others are limited to overnight occupancy, loading of explosives, quarantine, and so forth. There are now only 9 deep-water spaces in the Harbor for ships drawing 28 feet but the limited extension of existing anchorages has been authorized by the Federal Government.

With an increase in commerce or peak shipping operations such as occurred during World War II the capacity of existing channels and anchorages would be inadequate. New developments in ship design make it necessary to provide for vessels having deeper draft, greater length and higher speeds. Such characteristics require deeper and wider channels and more deep water anchorage berths.

30. **Proposed Improvement for Baltimore Harbor.**—To provide for the future needs of the harbor, representation should be made to the District Engineer, Corps of Engineers, for

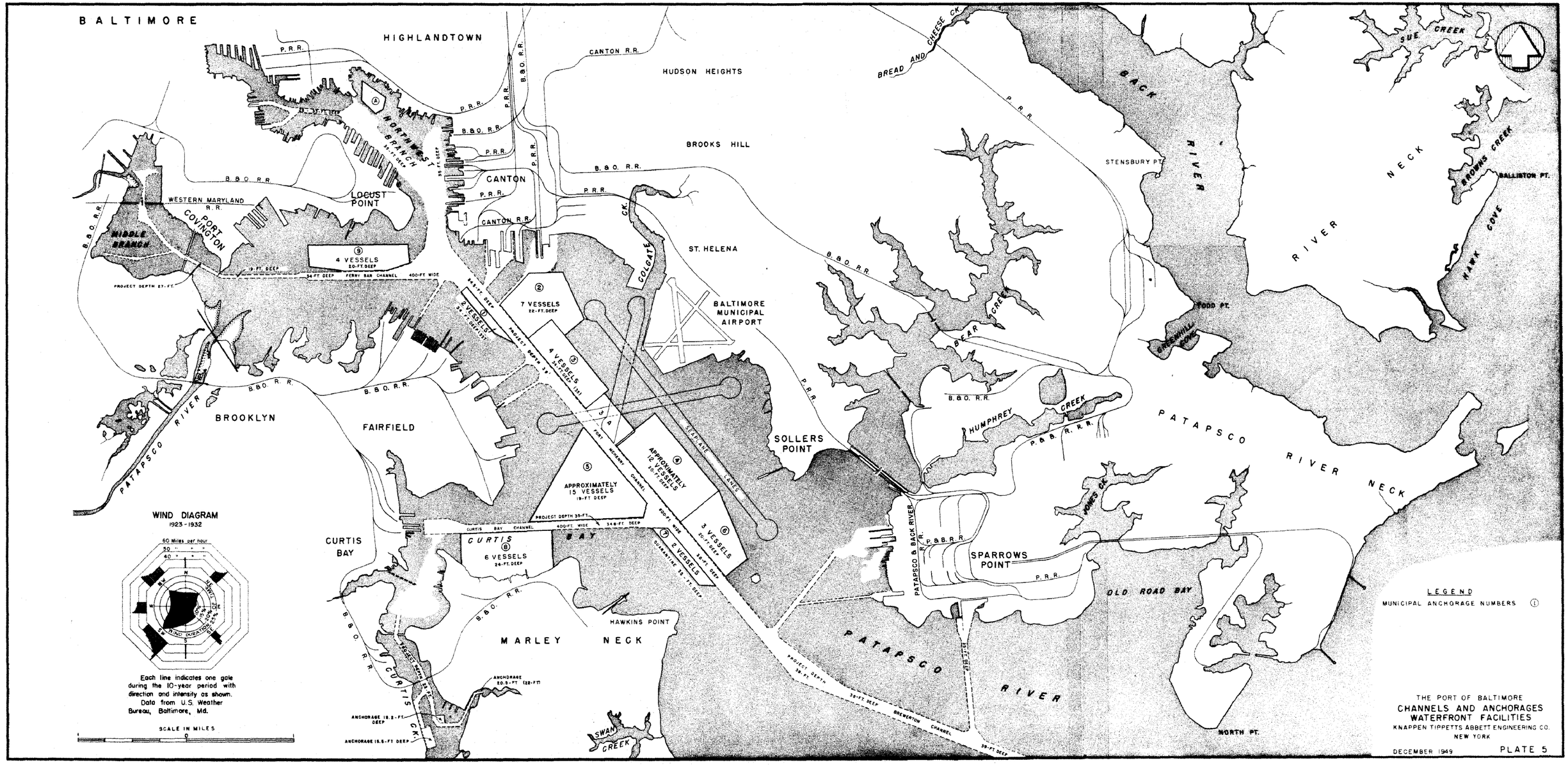
(a) A width of main channel from Craighill Entrance in Chesapeake Bay to Fort McHenry of 800 feet.

(b) Initially, a depth of 35 feet and width of 500 feet for the connecting channel from the Cutoff-Brewerton Angle to the Inland Waterway in Chesapeake Bay.

(c) Certain anchorages should be extended and deepened to 35 feet so that they will accommodate additional deep draft vessels.

The foregoing recommendations contemplate the completion of channel work already authorized by the Federal Government and the enlargement of the Riverview Anchorage to a depth of 30 feet.

31. **The Chesapeake and Delaware Canal.**—The full utilization of Baltimore Harbor is to a large degree dependent on the adequacy of the Chesapeake and Delaware Canal for ships of the depth and beam of those which enter the Harbor. The Canal has a present depth of 27 feet and its effective width at some points is reduced by encroaching bridge abutments to 165 feet. If Baltimore is to realize fully its potentialities in domestic and foreign commerce the Chesapeake and Delaware Canal should be enlarged immediately to provide a depth of 32 feet and a bottom width of


BALTIMORE
HIGHLANDTOWN
P.R.R.
B.&O.R.R.
CANTON R.R.
HUDSON HEIGHTS
BROOKS HILL
NORTHWEST BRANCH
35-FT. DEEP
CANTON
LOCUST POINT
WESTERN MARYLAND R.R.
PORT COVINGTON
MIDDLE BRANCH
19-FT. DEEP
34-FT DEEP FERRY BAR CHANNEL 400-FT WIDE
PROJECT DEPTH 27-FT.
9 4 VESSELS 20-FT.DEEP
ST. HELENA
COLGATE CK.
BALTIMORE MUNICIPAL AIRPORT
2 7 VESSELS 22-FT.DEEP
2 VESSELS 24-FT.DEEP
3 4 VESSELS 24-FT.DEEP (1931)
PROJECT DEPTH 30-FT.
BROOKLYN
FAIRFIELD
PATAPSCO RIVER
5 APPROXIMATELY 15 VESSELS 19-FT DEEP
4 APPROXIMATELY 12 VESSELS 30-FT DEEP
SEPARATE LANES
FORT MCHENRY CHANNEL
SOLLERS POINT
CURTIS BAY CHANNEL 400-FT WIDE 34.8-FT DEEP
PROJECT DEPTH 35-FT.
600-FT WIDE
CURTIS BAY
8 6 VESSELS 24-FT.DEEP
7 2 VESSELS QUARANTINE 35-FT. DEEP
6 3 VESSELS 30-FT DEEP
CURTIS BAY
HAWKINS POINT
MARLEY NECK
ANCHORAGE 20.5-FT (22-FT)
ANCHORAGE 18.2-FT DEEP
ANCHORAGE 15.5-FT DEEP
SWAN CREEK
PATAPSCO & BACK RIVER R.R.
P.B.&B.R.R.
SPARROWS POINT
OLD ROAD BAY
PROJECT DEPTH 35 FT.
35-FT. DEEP
BREWERTON CHANNEL
35-FT DEEP
NORTH PT.
PATAPSCO RIVER
BREAD AND CHEESE CK.
BACK RIVER
STENSBURY PT.
SUE CREEK
BROWNS CREEK
BALLISTON PT.
NECK
RIVER
HAWK COVE
TODD PT.
GREENHILL COVE
BEAR CREEK
HUMPHREY CREEK
PATAPSCO RIVER NECK
YONES CK.
WIND DIAGRAM
1923 - 1932
60 Miles per hour
50
40
N
NE
E
SE
S
SW
W
NW
WIND DURATION 25%
Each line indicates one gale during the 10-year period with direction and intensity as shown. Data from U.S. Weather Bureau, Baltimore, Md.
SCALE IN MILES
0
LEGEND
MUNICIPAL ANCHORAGE NUMBERS (1)
THE PORT OF BALTIMORE
CHANNELS AND ANCHORAGES
WATERFRONT FACILITIES
KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK
DECEMBER 1949
PLATE 5

350 feet; further enlargement to a 35-foot depth should follow as rapidly as funds permit. The plan of improvement of the Canal should provide for the straightening of the alignment and the reconstruction of bridge crossings to provide a vertical clearance of at least 135 feet and a horizontal clearance of not less than 500 feet.

The future of the Port of Baltimore will be materially enhanced by the development of the Chesapeake and Delaware Canal and representation for the improvement of the canal should be just as forceful as for improvements in Baltimore Harbor.

32. **Bridges in the Harbor.**—None of the existing bridges handicap harbor operations or restrict important channels, nor is it likely that they will interfere with expansion of the harbor and its facilities since the most favorable areas for further development lie downstream from these bridges. The interests of the harbor require that bridge encroachments be prevented. Future plans to relieve traffic congestion in the City should insure that new bridges do not interfere seriously with navigation and the development of the Port.

33. **Silt, Pollution and Drift in Harbor.**—The Harbor of Baltimore is fortunate in that very little silt is deposited from the tributary streams with the result that harbor maintenance costs are low compared with those of many other major ports.

The harbor is not excessively polluted by domestic sewage, storm water runoff or industrial wastes. Pollution is a deterrent to the expansion and development of facilities, particularly of industries requiring relatively clean water. In recognition of the importance of preserving the standards of the harbor and of further improving the water by reducing pollution there has been undertaken an investigation termed the "Patapsco Research Project" under the sponsorship of the State of Maryland and conducted by Johns Hopkins University. The results of this investigation should lead to the formulation of a policy for the control of wastes discharging into the harbor.

The Corps of Engineers has recently undertaken to remove harbor drift and is collaborating with the Baltimore Harbor Bureau in this work. The interests of the harbor require that appropriations for this activity from the Congress be continued.

GENERAL CARGO FACILITIES

34. **Desirability of General Cargo Commerce.**—General cargo is not only of relatively high value, and therefore of great influence on the economy of the Port area through the number of facilities affected by its movement, but it furnishes high priced top cargo needed to load profitably the vessels engaged in overseas commerce.

One of the reasons why most of the steamship lines serving Baltimore find it necessary to stop at other United States ports as well, is that general cargo has not

been shipped through Baltimore in sufficient volumes to permit full ship loadings. It is believed that this condition can be improved by providing modern waterfront facilities offering attractive and economic rail advantages.

35. **Factors Affecting Need for Improvements.—**

a. **Growth of Commerce.**—Based upon the volume of general cargo which by-passed Baltimore by rail in 1947, and an estimate of the additional tonnage by-passing the Port by truck, there are at present approximately 2,500,000 tons of additional general cargo per year which might logically be shipped through Baltimore. If this commerce is attracted to the Port, it will be necessary to have improved and expanded facilities to handle it.

b. **Ship Design.**—The trend in modern cargo ships is towards longer, deeper and faster vessels. Innovations in hatch arrangements, ships' gear and other cargo handling facilities alter the requirements for pier and transit shed layout and equipment.

c. **Mechanical Cargo Handling Equipment.**—The greater use of mechanical equipment to handle the large size ship cargoes makes possible and necessary wider piers and transit sheds.

d. **Growth of Trucking.**—Probably the most important factor affecting modern pier design is the increasing use of trucks in handling waterborne cargo. The ton-mileage of long distance, over-the-road trucking in the United States has tripled in the past twelve years. Forty per cent of this type of trucking occurs in the area tributary to the North Atlantic ports. The size of the trucking industry in Maryland is indicated by the fact that there are 140 common carrier truck firms serving the Port, about 280 truck fleets in the State operating eight or more trucks, and about 35,000 trucks in Baltimore County.

Contributing to the growth of trucking is the lower cost of shipping less-than-carload lots by this means than by rail, a matter that has been accentuated by a 70% increase in rail freight rates in the past few years. Improvements in highway and truck design which permit greater speed, load carrying capacity, and flexibility of operation also encourage truck hauling of general cargo.

36. **Requirements of Modern General Cargo Facilities.—**

a. **Piers.**—Baltimore's aim, both in the construction of modern port facilities and in the continuation and expansion of its port promotional activities, should be to provide a large percentage of complete ship loadings, made up of both bottom and top cargoes, and thus assure shippers of more frequent sailings to foreign ports.

A general cargo terminal must accommodate sea and land (both rail and truck) transport and must also provide sufficient transit shed area and pierside storage for the handling and temporary accumulation of cargoes. The layout of such terminals

must be sufficiently flexible to permit efficient operation throughout the expected life of these facilities, despite the continual evolutionary changes in sea and land transport which they serve.

A modern and efficient general cargo pier should have:

1. Berths 550 to 600 feet long with a water depth of 35 feet;
2. Slips between finger piers at least 300 feet wide;
3. Wide pier aprons with at least two surface tracks;
4. Depressed tracks and truck docks for easy loading of both railroad cars and motor trucks;
5. Railroad and roadway access to railroad yards and highway networks, respectively;
6. Flexibility in design to permit continuous improvement.

b. **Transit Sheds.**—In discussing the Port's storage facilities a distinction is made between the terms "warehouse" and "transit shed." A warehouse is the facility used for the storage of goods for relatively long periods in their movements to or from shipside; it may be a building on a pier or it may be a structure adjacent to or even distant from the piers. A transit shed is the facility located on or immediately adjacent to the pier for the purpose of holding goods for the period which rarely exceeds the few days required for the accumulation or distribution of a ship's cargo. Modern transit sheds should provide at least 90,000 square feet of storage floor area per berth to permit simultaneous storage of incoming and outgoing cargo. Desirable dimensions are 500 feet long by at least 250 feet wide or 500 feet by 500 feet for finger piers. Until recently the practical width of transit sheds on finger piers has been limited to 75 feet for each berth, or a total of 150 feet, by the cost of hand truck movement. The use of fork lift trucks and tractors and trailers has changed this to make a 250-foot movement practical. This makes it possible now to increase greatly the cargo handled per berth.

c. **Pierside Warehouses.**—For most efficient port operation, the minimum quantity of pierside warehouse space should be about 5 per cent of the annual volume of the general cargo passing through the Port (upon the assumption that normally 20 per cent of this cargo is stored an average of three months).

d. **Cargo Handling Equipment.**—The use of mechanical handling equipment should be more universal. There are too many examples of the handling of packaged goods by manpower, instead of the palleting and movement of such by fork lifts, small trucks and trailers. A more extensive use of simple gravity roller conveyors for the loading and unloading of trucks and railroad cars is recommended.

The following table illustrates the savings resulting from efficient use of adequate cargo handing equipment of the smaller types including fork trucks (optimum range—up to 300 feet), tractor trucks and trailers (optimum range—up to 1,500 feet), and battery powered hand trucks (optimum range—up to 400 feet). The statistics given below were derived from the records of a large steamship company which, over a 14-year period, gradually installed mechanized equipment at its New York pier. These figures were included in an article by W. L. Clews and S. I. Cooper published in the October 1949 issue of "World Ports."

MECHANIZED EQUIPMENT SAVINGS

Period and Years Included	Longshore Wages Per Hour Straight Time - Overtime	Straight Time Hours Per Week	Average Longshore Costs Per Ton Handled Loading - Discharging
1st (1 yr.)	$ .75 $1.10	48	.8967 .8664
2nd (5 yrs.)	.75 1.10	48	.8238 .8111
3rd (3 yrs.)	.80 1.25	48	.6864 .5264
4th (1 yr.)	.90 1.35	48	.7247 .5483
5th (4 yrs.)	.95 1.42½	44	.9006 .6134

The above figures show that although straight time labor costs increased over 26.5 per cent, average longshore costs per ton handled increased only a fraction of 1 per cent for loading operations, and decreased almost 30 per cent for discharging operations. It is apparent that the use of mechanized handling equipment decreases the physical labor required, reduces loading and unloading time, decreases demurrage, reduces damage to goods and effects considerable economies in overall handling operations.

37. **Adequacy of Facilities.**—Throughout the United States existing piers and other waterfront facilities are becoming obsolete due to new developments in ship, rail and truck transportation, cargo handling facilities and port practices. While Baltimore is one of the most modern ports in the United States a great many of the existing piers in the Port were constructed at a time when railroads were the only means of transport of long-haul freight. For the most part, the piers were not designed to serve truckborne cargo efficiently. Also, shippers are inconvenienced and berth capacities are limited by the lack of adequate transit storage on the piers and in warehouses adjacent to the general cargo piers.

38. **Evaluation of Baltimore's General Cargo Facilities.**—Twenty-two piers in Baltimore Harbor are used for general cargo. The piers are generally in good physical

condition. With the exception of five piers in the Inner Harbor these facilities have water approaches of 30 feet or more in depth and are located near adequate maneuvering basins. Although the 17 deep water piers have good railroad connections, highway access is not satisfactory for modern truck traffic. The principal features of these general cargo piers are summarized in Table VI-1 in Volume II.

Because of the narrow general cargo piers which were constructed at a time when freight was almost exclusively man-handled, there is a deficiency of transit shed space in the Port. There is also a shortage of pierside warehouses. The volume of general cargo in Baltimore of the type which might benefit from pierside storage space amounted to over 4,000,000 tons in 1947. The existing pierside storage warehouse capacity in Baltimore is approximately 80,800 tons or 2 per cent of the 1947 general cargo volume. Shippers have found this to be insufficient and have stated that during the years 1947, 1948 and 1949 they have been forced either to use other ports or to use the more distant warehouses, thus incurring additional transportation and handling costs.

The existing Canton Terminal partially fulfills a need in the Port for a deep sea facility served by several railroads. The piers are well placed near the main ship channel and anchorage area and are backed up by extensive tracts of sparsely developed land. The railroad yards, highway improvements, and warehouse space which will be required for an extensive enlargement of this terminal can be built in these relatively undeveloped areas at a reasonable cost.

The Pennsylvania Railroad terminal has two general cargo piers. Pier No. 1 is fairly new and in excellent condition structurally. It does not provide adequate transit storage and warehouse facilities for the four deep draft ship berths which the pier is designed to serve.

Around the Inner Harbor, the piers are all old and, with one or two exceptions, in poor condition. Municipal Pier No. 1 has been renovated. Only a relatively small number of these piers are used for the transhipment of general cargo, lumber, and tropical fruits. The narrowness of both slips and berths, the limited access for both truck and rail traffic, the lack of adequate areas for warehouses and roadways and the inadequate maneuvering area provided for ships severely restrict the usefulness of these facilities. The Light Street Piers are open pile, timber decked structures of various shapes and sizes. The depth of water alongside is very shallow. The City of Baltimore is presently in the process of acquiring all the properties along this waterfront with the intention of creating a recreational and parking area. Until the Port's marine traffic warrants further expansion in this area, the use proposed by the Planning Commission would probably be in the best interests of the City. This area should, however, be reserved for future expansion of coastwise commerce facilities as the need develops.

At Locust Point the Baltimore and Ohio piers are generally in good structural condition. However, all the general cargo piers and the transit sheds thereon are narrow. This results in execessively long hauls by terminal equipment parallel to the berths. The space limitations for the handling and storage of cargo do not permit the simultaneous accommodation of more than one ship. The narrowness of the piers requires the exclusion of over-the-road trucks from the interior of transit sheds. Due to the narrowness of slips at these piers, ship access to the inner berths is difficult.

The McComas Street Piers are owned by the City but operated by the Western Maryland Railway and are in excellent structural condition. They are well located with respect to rail and highway connections and deep water approach channels. Truck access to the piers is somewhat restricted by the narrow doorways of the piersheds, by certain obstructions in the terminal roadway, and by the narrowness of this roadway at certain points. The existing transit storage areas are not large enough to serve the number of deep draft berths which are available and the warehouse storage capacity is similarly deficient. There is an extensive tract of unimproved waterfront area, immediately adjacent to the piers, which is susceptible to development as a marine terminal at reasonable cost.

The Western Maryland Railway owns only one general cargo pier which is located about $\frac{1}{2}$ mile west of the McComas Street Piers. It is handicapped by the narrowness of the pier, the lack of room adjacent to it for future terminal expansion, and the narrow, tortuous access road serving it.

Although only four of the twenty-two piers used for general cargo closely approach modern standards, loading and unloading operations are quickly handled and the turn around time of ships compares favorably with that in other ports. In order to make the port more efficient and up-to-date various alterations, improvements, and new construction are necessary as outlined in subsequent paragraphs.

39. **Master Plan of Port Development.**—The waterfront of Baltimore Harbor is owned by railroads, manufacturing concerns, industries, individuals and the City. Improvements have been made by the owners, when and as required, more or less independently of each other's plans. Except for the establishing of a bulkhead and pierhead line by the U. S. District Engineers, and the area zoning, and building restrictions imposed by the City, little attempt has been made to control the growth of the waterfront area.

Some years ago, a comprehensive plan for the development of marine terminals was prepared but, except for the McComas Street Piers, the proposed developments have not materialized. The municipal piers along Pratt Street are fairly orderly in arrangement but water and rail access is poor. The railroad piers have good approaches but their layout does not seem to have followed a long range plan. Elsewhere

in the Port the location, arrangement and layout of the piers do not appear to have followed any systematic plan of development.

Long range port planning is a means by which development of this nature could be remedied. It would provide a broad framework to guide the future growth of the area to the best possible advantage of the port interests. It would comprise a general plan to which all future detailed plans for improvements, extensions and expansion could be made to conform. Under present circumstances this could only be accomplished through the cooperative effort of all waterfront interests. Such planning would be an attempt, not only to arrest, but also to correct as far as possible, haphazard developments resulting from failure to visualize the collective present and future needs. Such planning must recognize existing conditions and limitations, which in some instances, it is impractical to change, as well as to coordinate well-conceived plans of individual property owners so that they may fit into the broad and comprehensive framework.

The improvement of general cargo facilities in Baltimore can be accomplished most effectively through the use of an approved plan of development which would assure of their fitting into the overall plans for the Port. Such a plan would permit costs to be anticipated and budgeted and encourage continuity of action as the Port grows. A Master Plan of Port Development therefore is recommended (Plate 6). It is divided into three stages to meet present and future requirements. This is intended to be a general guide for the future development of the Port and rigid adherence to the stage plan of port improvement is not necessary nor is it essential to follow in detail the pattern of improvements proposed.

The projects included in Stage I consist primarily of alterations to existing facilities with a view to permitting more efficient functioning of the Port. These improvements are important at the present time. In Stage II, existing structures will be further improved and expanded to provide a greater capacity to handle the additional commerce in general cargo which is anticipated. This work should be done in accordance with traffic requirements. Recommendations are made in Stage III for modern marine terminals which not only will meet the increased requirements of waterborne trade, but will also attract such commerce by their modern and more efficient operations. Such terminals will add to the capacity of the Port, furnish facilities for new types of cargo and supplant existing installations which have become delapidated or obsolete.

40. **Program for Stage I of Master Plan.**—The following recommendations are made for alterations and improvements to general cargo facilities during Stage I.

a. **Lower Canton Terminal (Plate VI-1, Vol. II)**

1. Build access roads along existing transit sheds.
2. Erect new transit shed with 190,000 square feet of area, on Pier No. 10 of the Retainer Pier (Piers 10 and 11).

3. Widen Newgate Avenue (marginal street).
4. Widen approach roads, Leland Avenue and Haven Street.
5. Build a storage warehouse of 30,000 tons capacity on Newgate Avenue opposite the Retainer Pier.
6. Provide additional mechanical cargo handling equipment on Pier No. 3.

With the construction of a transit shed on the west side of the Retainer Pier, the installation of cargo handling equipment (including gantry cranes) and the provision of better access roads, the capacity of the terminal would be increased by 750,000 tons of general cargo per year, each of the three berths being capable of handling more than 250,000 tons. (This estimate is based on the assumption that a berth would be operating at least 200 days per year on one 8-hour shift per day).

b. **Pennsylvania Railroad Terminal at Upper Canton (Plate VI-2, Vol. II)**

(1) Build a storage warehouse of 15,000 ton capacity across Clinton Street opposite Pier No. 1.

This facility will provide needed warehouse space close enough to the pier to permit efficient use of mechanical handling equipment.

c. **The Municipal Piers Nos. 1 through 6 Along Pratt Street (Plate VI-6, Vol. II)**

(1) Construct a marginal wharf to replace most of the existing piers.

In view of the City's plans for a park along the Light Street waterfront, it is important that the Pratt Street improvement be included in Stage I. The proposed marginal wharf will provide facilities for the Bay excursion boats and coastwise passenger-cargo ships which now utilize the Light Street Piers.

d. **Baltimore and Ohio Railroad Piers at Locust Point (Plate VI-3, Vol. II)**

(1) Improve vehicular traffic circulation by widening and realigning the existing access road.

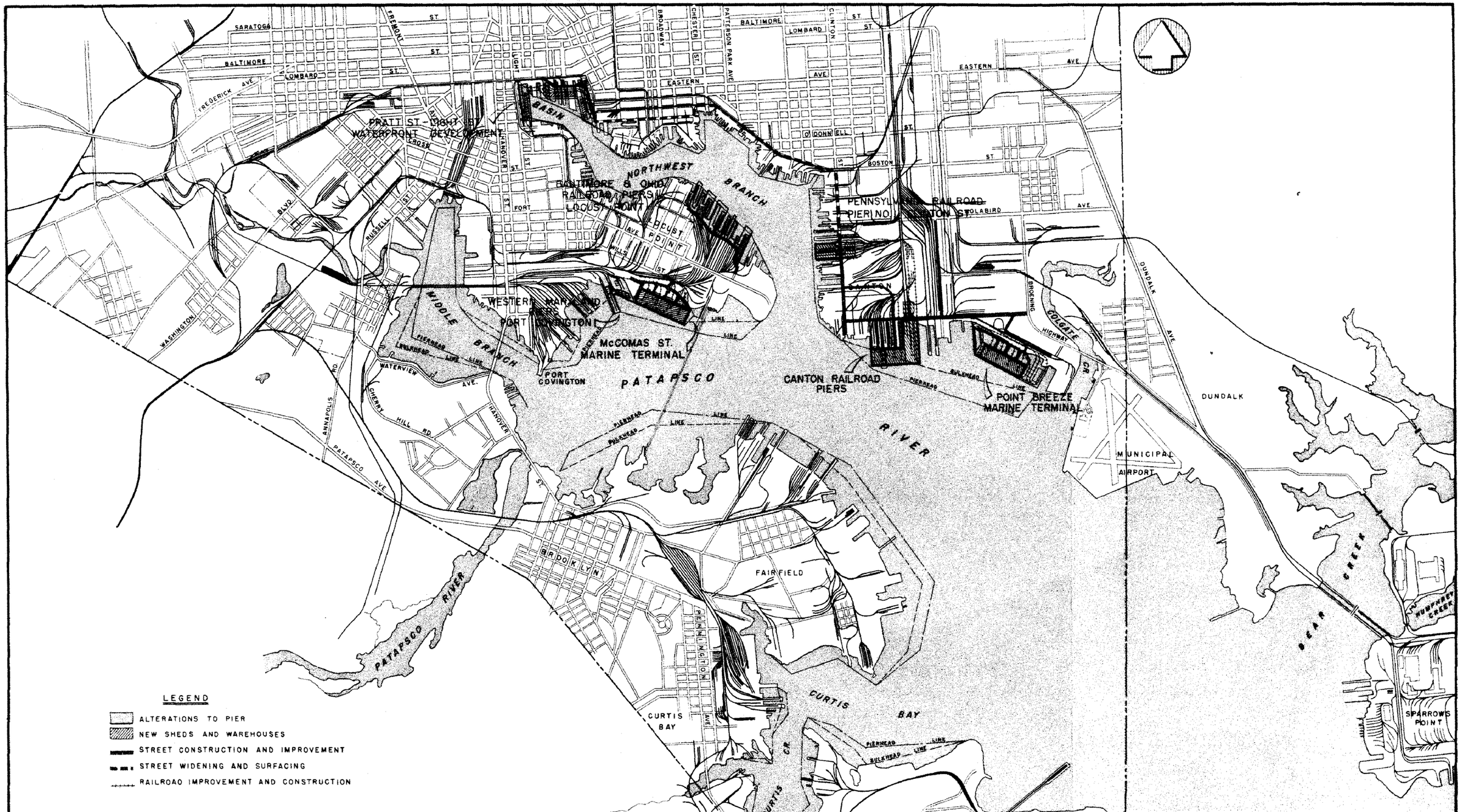
(2) Building additional truck loading platforms to facilitate movement of cargo by trucks.

(3) Lengthen existing platforms at foot of piers to permit loading operations.

(4) Move offices and other rooms at foot of piers further in on the pier or up to the second floor to provide more door space at inshore end of piersheds.

(5) Cut side doors at foot of pierhead to permit better access to pier from wing platforms.

(6) Provide areas for truck and passenger car parking.



THE PORT OF BALTIMORE

MAP OF PROPOSED WATERFRONT IMPROVEMENTS

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

DECEMBER 1949

PLATE 6

The provision of additional and wider truck loading platforms at the shore end of piers and the more generous use of mechanical cargo handling equipment will offset to a large degree present shortcomings. Complete modernization of this terminal would involve the razing of some of these piers to permit the construction of wider, more efficient facilities and to provide more adequate berthing space.

The volume of general cargo now passing over the piers of this railroad is close to the capacity of the terminal. Any sizeable increases of commerce will require the construction of additional facilities. In 1946 the Baltimore and Ohio Railroad studied the widening of pier aprons, the installation of car-pullers and gantry cranes and the construction of staging to serve the upper decks of pierheads. The program of improvements then developed is of benefit to the Port, and should be carried forward expeditiously. Apron extensions should be designed and paved to permit their use by both rail and truck traffic and the terminal road at the foot of the piers widened as is proposed herein.

e. **The McComas Street Piers (Plate VI-4, Vol. II)**

(1) Widen entrance doors for trucks on existing sheds.

(2) Provide loading platform at Pier No. 7.

(3) Remove fire hydrants behind Warehouse "A" from roadway to a better location.

(4) Widen roadway at rear of Pier No. 9.

(5) Build a new warehouse of 12,000 tons capacity adjacent to existing Warehouse "A".

Minor deficiencies will be overcome by the alterations. The 12,000-ton warehouse recommended is intended to meet the most serious need at these piers.

f. **Western Maryland Railway Pier (Port Covington)**

No action to be taken in Stage I. It is suggested that the one pier owned by this railroad be changed to a bulk cargo facility upon completion of the ultimate expansion of the McComas Street Terminal.

41. **Program for Stage II of the Master Plan.**

The following projects are recommended to be constructed as increased commerce manifests itself:

a. **Lower Canton Terminal (Plate VI-I, Vol. II)**

(1) Extend Pier No. 11 of the Retainer Pier eastward and erect a spacious transit shed over it.

Upon completion of the expanded Retainer Pier (six modern berths) the capacity of the pier would be in excess of 1,500,000 tons of general cargo annually.

b. **Pennsylvania Railroad Terminal at Upper Canton (Plate VI-2, Vol. II)**

(1) Remove Pier No. 6; widen Pier No. 1 to the north to adequate proportions.

(2) Add another warehouse unit of 15,000-ton storage capacity opposite the Pier No. 1 extension.

Pier No. 6 is an old timber pier immediately adjacent to Pier No. 7. The proximity of the two piers seriously impairs the use of the berths on the north side of Pier No. 6, while remnants of a pier less than 100 feet south of Pier No. 6 interferes with the use of the inner berth on that side. The widening of Pier No. 1 would be a better investment than any attempt to replace or improve Pier No. 6.

The Pennsylvania Railroad operates three general cargo piers in the Port of Baltimore. At present it is carrying a substantial tonnage of cargo to other ports as well. If more extensive facilities are provided at Baltimore, the Pennsylvania Railroad may find it advantageous to make greater use of this Port. Therefore, the widening of the Pennsylvania Railroad Pier No. 1 and the improvement of the Canton Retainer Pier, both of which can be served directly by the Pennsylvania Railroad, are proposed. Upon completion of the widening of Pier No. 1 this pier would have available four large modern berths and its capacity would exceed 1,000,000 tons a year.

c. **Baltimore and Ohio Railroad (Plate VI-8, Vol. II)**

(1) Remove existing superstructures of Piers Nos. 6 and 7 and construct large modern pier.

The existing piers are extremely narrow and inefficient for modern vessels. The new pier would be 1200 feet long and 470 feet wide providing four 600-foot berths. Its main deck would incorporate the present substructures. Grain galleries connected to the existing elevator would supplant the existing facilities. Upon completion this pier will increase the capacity of the presnt pier by 700,000 tons.

42. **Stage III: Marine Terminals**

While the improvements recommended under Stages I and II will be sufficient to serve the anticipated increase in commerce in the near future, it is necessary to round out the Master Plan by providing long range plans for general cargo facilities that can capture and efficiently handle Baltimore's share of any future increase in the Nation's commerce. Several new and modern marine terminals are suggested for that purpose.

In recent years, various interests in Baltimore have proposed the following locations as sites for new general cargo terminals: Hawkins Point, the Arundel Area, the McComas Street waterfront, the Boston Street waterfront, the Canton Area (including Point Breeze), and Sollers Point.

A review of these sites indicates that, in terms of the most efficient and economical rail, truck, and ship access, as well as effective use of existing facilities and the availability of relatively undeveloped areas for future expansion adjacent to these waterfront sites, the most attractive for future terminal development are the McComas Street and Canton (including Point Breeze) waterfronts.

In selecting the sites discussed below for new marine terminals, the cost of good railroad and highway connections and the cost of dredging approach channels and turning basins were considered. The locations proposed are the result of logical compromise of these factors.

a. **The Lower Canton Terminal** will be an outgrowth of the improvements proposed in Stages I and II for the Canton Retainer Pier. Although upon completion of Stage II the Retainer Pier would be excellent, it would still have the limitations inherent in any finger type pier. These limitations include: (1) a shortage of easily accessible warehouse facilities; (2) the necessity for both rail and truck traffic to outer berths to pass by the inner berths; (3) the lack of tail-gate-level loading facilities for trucks at outer berths; (4) the likelihood of interference with operations at outer berths which may result when ships are moved to or from inner berths; (5) the inflexibility of this type of structure for adaptation to changes in transportation equipment. It is, therefore, recommended that the third or final stage of development of the Lower Canton Terminal combine the individual piers into one large terminal having the desirable features of several marginal type piers. This is shown on Plate VI-1, Vol. II.

On the marginal wharves of the type proposed, ships could tie up or cast off with ease and without disturbing operations at adjacent berths. Each berth would have its own independent railroad siding, direct truck access, tail-gate-level loading platforms, and warehousing area on the same level and under the same roof as the transit storage area. In addition, extensive upland for open storage and other uses would be gained. Six of the largest cargo ships afloat could be accommodated at the general cargo berths at one time. A seventh berth for bulk cargoes and an eighth for bottom clean-out of bulk cargo vessels are provided at the west apron. It is estimated that the capacity of each of the six general cargo berths would approach 400,000 tons per year, or a 60 per cent increase over the capacity per berth on the finger type pier of Stage II. The total capacity of that terminal would probably exceed 2,400,000 tons of general cargo per year. This is presented as a conservative estimate. In terms of fully loaded ships only twenty, large, modern, cargo ships per year per berth, discharging and loading to full capacity, would be required to give this volume.

The Canton, the Pennsylvania, and the Baltimore and Ohio Railroads would all have access to this terminal through existing connections. The existing Clinton Street and the widened Newkirk Street will provide good highway access to the terminal.

b. **McComas Street Terminal.**—The area immediately east of McComas Street Pier No. 9 is ideally situated for marine terminal development. The installation proposed under Stage III would be a marginal type wharf development comparable to those described above and capable of berthing four modern cargo vessels (Plate VI-5, Vol. II). Rail connections would be provided to the Baltimore and Ohio Railroad and the Western Maryland Railway. It is estimated that the capacity of the terminal would be about 1,600,000 tons of general cargo annually.

Piers Nos. 7, 8 and 9 of the existing terminal are further improved in this stage of development by increasing transit storage capacity. These piers are to be incorporated in the overall terminal operations.

c. **The Point Breeze Terminal** would provide a combination of general cargo and bulk cargo facilities (Plate VI-7, Vol. II). Ore ships would be moored to the eastern bulkhead for rapid unloading, for the most part directly to railroad cars, and then would be shifted to the southern bulkhead for final bottom clean-out. It is estimated that the capacity of this facility would be at least 5,000,000 tons of iron ore per year.

Four general cargo berths comparable to those described under the Stage III improvement for Lower Canton, would occupy the southern bulkhead, and would have a total capacity of approximately 1,600,000 tons of general cargo per year. The western bulkhead of the terminal would serve as a heavy cargo facility for lumber, steel, machinery, etc., or as a supporting bulk cargo facility. This terminal also would be served by the Canton, Pennsylvania, and Baltimore and Ohio Railroads.

d. **Ultimate Development of the Baltimore and Ohio Railroad Piers at Locust Point.**—As mentioned previously, the Locust Point piers should be replaced with modern piers when such replacement in financially attractive. The configuration of the waterfront and the nature of the adjacent facilities make the finger type pier development shown on Plate VI-8 of Volume II superior to the marginal type development at this terminal. Certain of the existing piers would be incorporated in the proposed piers while others would be razed to provide wide slips. The capacity of the proposed piers would be about 3,300,000 tons of general cargo annually. The existing bulk cargo piers (Nos. 4E and 4W) should be eliminated to provide slip space and a new bulk cargo pier constructed.

e. The tables on the following pages give the estimated cost of construction of the new facilities proposed under the Master Plan for Port Development.

The new construction suggested for Stages I and II of the proposed Master Plan will add approximately 3,200,000 tons of general cargo handling capacity a year to the 4,000,000 tons estimated as the present annual general cargo capacity of the Port. The improvements suggested under Stage III of the Master Plan will provide mod-

ern facilities with the most advantageous combination of rail, truck and ship services at locations within the harbor which are best adapted to ultimate port development.

SUMMARY OF PRELIMINARY ESTIMATE OF CONSTRUCTION COST OF IMPROVEMENTS PROPOSED FOR GENERAL CARGO PIERS

STAGE I

CANTON PIERS	(Sheds, Roads, Gantry Cranes)	$ 3,300,000
CANTON PIERS	(Cargo Handling Equipment other than Gantry Cranes)	770,000
WAREHOUSE	(Adjacent to Canton Piers Nos. 10 and 11)	4,000,000
WAREHOUSE	(Adjacent to P.R.R. Pier No. 1)	2,000,000
B. & O. R.R. PIERS	(Truck Docks and Road Relocation)	494,000
McCOMAS STREET PIERS	(Truck Docks, Road, etc.)	136,000
WAREHOUSE	(Adjacent to McComas St. Warehouse "A")	1,600,000
MUNICIPAL PIERS AT PRATT ST.	(Bulkheads, Sheds, Paving, Cargo Handling Equipment)	6,300,000
	TOTAL—STAGE I	$18,600,000

STAGE II

CANTON PIERS NOS. 10 and 11	(Pier Extension, Sheds, Roads, Gantry Cranes)	$ 8,400,000
CANTON PIERS	(Cargo Handling Equipment other than Gantry Cranes)	500,000
PENNA R.R. PIER NO. 1	(Pier Extension, Sheds, Gantry Cranes)	9,100,000
PENNA R.R. PIER NO. 1	(Cargo Handling Equipment other than Gantry Cranes)	400,000
B. & O. R.R. PIERS NOS. 6 and 7	(Reconstruction and Cargo Handling Equipment)	10,000,000
WAREHOUSE	(Adjacent to Penna. R.R. Pier No. 1)	2,000,000
	TOTAL—STAGE II	$30,400,000

	STAGE III	
POINT BREEZE TERMINAL	(Including Gantry Cranes and Ore Handling Equipment)	$25,000,000
POINT BREEZE TERMINAL	(Cargo Handling Equipment for General Cargo Berths, other than Gantry Cranes)	800,000
CANTON PIERS		10,800,000
B. & O. R.R. PIERS	(Reconstruction of Piers Nos. 3, 4, 5, 8, 9 and 10)	22,000,000
McCOMAS STREET PIER NO. 7		1,000,000
McCOMAS STREET PIER NO. 8		530,000
McCOMAS STREET PIER NO. 9		810,000
McCOMAS ST. TERMINAL	(Including Gantry Cranes)	18,000,000
McCOMAS ST. TERMINAL	(Cargo Handling Equipment other than Gantry Cranes)	800,000
	TOTAL—STAGE III	$79,740,000

BULK CARGO PIERS AND MISCELLANEOUS FACILITIES

43. **Adequacy of Piers.**—This bulk cargo facilities at Baltimore are adequate to meet the foreseeable needs of the Port. The only facilities which may be insufficient in the near future are those for the handling of ore.

44. **Grain Elevators.**—The facilities for transshipping grain in bulk are owned and operated by the three trunk-line railroads serving the Port of Baltimore. These consist of three grain elevators of reinforced concrete construction, with modern grain handling and loading equipment, located at finger piers having 30 to 35 feet of water alongside. The total storage capacity is 12,123,800 bushels, or 334,000 tons, and the total ship loading capacity is about 15,000 tons per hour. This is ample for the needs of the Port.

45. **Coal Handling Facilities.**—The coal tipples, like the grain elevators, are owned and operated by the three trunk-line railroads serving the Port. Each of the three coal terminals is equipped with car dumpers, and mechanical moving and loading conveyances for the delivery of coal to vessels. The total coal loading capacity is approximately 6,500 tons per hour.

The average annual volume of coal exported during 1936-1945 was about 350,000 tons. In 1947 a total volume of more than 11,000,000 tons was handled. Since this

is a peak volume, it is evident that the bulk coal facilities of the Port are adequate for normal requirements.

46. **Bulk Oil Handling Facilities.**—Bulk oil facilities are provided at eleven piers operated by leading oil companies. The total storage capacity of these installations is 4,900,000 barrels, or about 735,000 tons, which is considered adequate to serve the needs of the Port.

47. **Existing Ore Docks.**—Piers for the handling of ore in bulk are owned by the three trunk-line railroads and the Bethlehem Steel Company. The piers have 30 to 35 feet of water alongside and the loading and unloading of ships is accomplished with modern mechanical equipment. The four piers have a handling capacity of about 4,000 tons per hour. Several other piers in the Port handle miscellaneous ores and metals.

In 1948, imports of ores and metals were about 6,300,000 tons, the largest volume ever received at the Port. Although the Port's ore handling piers proved adequate, any further sizeable increase in ore imports will require additional facilities.

48. **Miscellaneous Piers.**—There are numerous important industrial and commercial piers in the Port of Baltimore designed for the shipment of special commodities. The size of each of these piers is a function of the needs of the industry involved, hence no detailed analysis was made of their adequacy.

The privately owned general cargo piers within the limits of their capacities are valuable supplements to the marine terminals owned or operated by the railroads; however, due to the short berths and, with few exceptions, the shallow water at the berths, the private piers are capable of providing only limited service.

49. **Other Waterfront Areas.**—The lack of an overall plan for the Port has resulted in the random development along a part of the waterfront which will make modernization difficult.

FOREIGN-TRADE ZONE

50. **Description and Purpose of a Foreign-Trade Zone.**—A foreign-trade zone is an area where foreign merchandise may be landed, stored, repacked, sorted, mixed, or otherwise manipulated, processed, reconditioned, or modified for sale or re-export with a minimum of customs control and without customs bond. The existing law prohibits manufacturing or formal exhibiting within such a zone. Experience in a number of ports in the United States shows that the processing of various commodities through such a zone has had a beneficial effect on port commerce in general and on the volume of general cargo specifically.

A foreign-trade zone is primarily a marketing enterprise, not a warehousing venture. The activities of the zone in New York, for example, do not seem to have an adverse effect on the bonded warehouses there. The warehouse industry is supporting, in Congress, the Rabin Bill which would extend foreign-trade zone privileges to bonded warehouses. This would appear to be further evidence that such zones offer considerable advantage, in their greater flexibility, over customs bonded warehouses. These warehouses handle only dutiable merchandise and are under highly restrictive regulations.

51. **The Economic Feasibility of a Foreign-Trade Zone.**—The establishment of a foreign-trade zone is essentially a long range proposition which, in its development and educational stage, cannot be expected to be self-supporting. Of the five foreign-trade zones now in operation in the United States, the New York zone, established February 1, 1937, provides the only experience of sufficient duration on which to base an appraisal of the potentialities of such a zone. Its annual revenues have exceeded its operating expenses (exclusive of capital costs) except during the first two years of operation. It is believed that a foreign-trade zone in Baltimore would experience a development similar to that of New York. The income to the zone would probably be sufficient in a few years to meet the zone's operating expenses, but would not cover debt service on necessary capital investments.

52. **Revenues and Expenses of a Foreign-Trade Zone.**—The revenue of a foreign-trade zone is derived primarily from fees for dockage, wharfage, storage, demurrage, pilotage, berth assignment, and cargo handling; from rentals of land, buildings, and pipeline right-of-ways; from fees for general permits, franchises, manufacturers applications and permits, transfers, cargo handling permits, terminal concessions, and other franchises and licenses.

The expenses will include the salaries of a manager, supervisors, accountants, other administrative personnel and customs guards; the wages of warehousemen and maintenance personnel; overhead costs; and debt service on capital expenditures.

53. **Factors Affecting Traffic of a Foreign-Trade Zone.**—Among the important factors affecting potential zone tonnage are the following: location, facilities and services provided, storage rates, promotional work, development of new shipping routes, and increase in total volume of foreign trade. Of these factors probably the most important is the proper location of the zone. The zone should be adjacent to the cross-roads of foreign traffic and near the lines of domestic transportation; ample banking facilities should be available nearby; and it should be located in an area susceptible to the establishment of market centers.

54. **Objections to a Foreign-Trade Zone.**—Opponents of the foreign-trade zone principle have in the past raised the following objections: (1) Such a zone is a form of subsidized competition to, and provides no material advantage over a privately owned customs bonded warehouse; (2) such a zone would not be self-supporting and would require an annual subsidy derived from increased port charges or increased taxes; (3) the trade zone principle has not yet been proven and its establishment should be deferred until the results at other ports can be appraised.

55. **Prospects of a Foreign-Trade Zone at Baltimore.**—A foreign-trade zone at Baltimore should benefit the Port since that part of the trade now being handled through the New York Trade Zone enroute to Baltimore could move directly to the Port.

However, the establishing of a foreign-trade zone at Baltimore seems, at this time, to be a matter which can well be deferred until problems of greater urgency are solved. This suggestion does not imply that a foreign-trade zone would not, in the future, be very beneficial to the Port of Baltimore. The proposed Port District Commission should give consideration to the development of such a zone as one of its potential projects for enhancing the Port as soon as the situation for the handling of general cargo has been improved.

INTERNATIONAL HOUSE AND TRADE MART

56. **Functions and Operations.**—An International House and International Trade Mart are instruments developed at certain ports to promote foreign trade. Essentially an International House is a combination of a social club and business organization established for the convenience of both foreign and domestic traders. It provides private offices, interpreters, a library of trade information, trade experts, and other services designed to facilitate the business of export-import commerce. An International Trade Mart is a trade center providing offices and display rooms for foreign and domestic products available for international commerce. Both of these facilities are normally operated on a non-profit basis, financial support being subscribed by both domestic and foreign business men and traders.

57. **Prospects of an International House and Trade Mart at Baltimore.**—Conditions favorable to an International House and Trade Mart do not obtain, at present, in Baltimore. In New Orleans where these facilities have been successful a large portion of the foreign commerce passing through the Port consists of miscellaneous and general cargo, as well as certain types of bulk cargo, traffic which is particularly susceptible to development through the media of an International House and Trade Mart. Baltimore's foreign trade, however, is essentially bulk cargo which in general does not require this type of business arrangement. With the development of additional general

cargo commerce in Baltimore the need for such facilities may increase and it is recommended that the proposed Port District Commission review periodically the desirability of fostering the development of an International House and Trade Mart.

58. **Ship Building and Ship Repair.**—The facilities offered in Baltimore for the building and repair of ships have established the Port as one of the leading marine construction and repair centers in the United States and have been influential in establishing Baltimore as an important port-of-call for the vessels of many of the world's leading shipping lines.

These faciities include two large graving docks, seven floating drydocks, eleven shipways, nine marine railways and numerous outfitting piers, shops, and floating repair equipment. These yards and shops continue to contribute directly and effectively to the prosperity of the Port.

It is probable that no extensive expansion of existing facilities of this type will be necessary for many years to come.

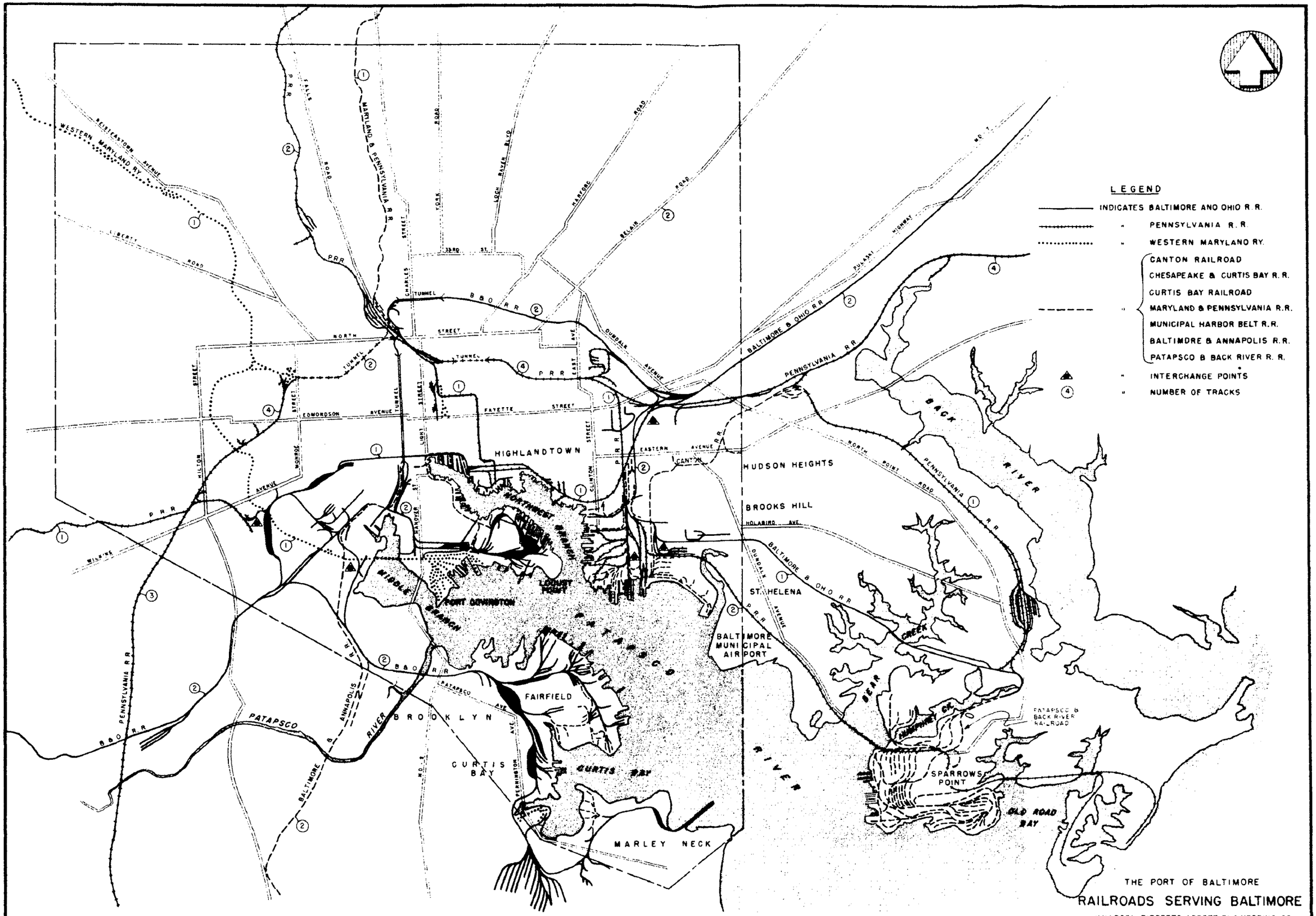
RAILROAD FACILITIES

59. **Railroads Serving Baltimore.**—There are three trunk-line railroads serving the Port of Baltimore: the Baltimore and Ohio and the Pennsylvania Railroads reach all important points in the Trunk Line Territory and the Central Territory, the areas tributary to Baltimore (Plate 7), and the North Atlantic ports; the Western Maryland Railway is less extensive but, through interconnection with other lines, covers the same area. All three roads provide service to points throughout the United States and Canada via other lines.

Other railroads serving Baltimore beyond the City limits are the Maryland and Pennsylvania, which operates only to York, Pa., and the Baltimore and Annapolis, an electrified line between Baltimore and Annapolis.

Within the port area, the Baltimore and Ohio controls more than 60 per cent of the port's trackage and sidings; the Pennsylvania, better than 30 per cent; and the Western Maryland, about 3 percent. The Canton Railroad serves a small but highly industrialized area in the Canton section of the city. All four lines either directly or through interconnection and lighterage serve their own general cargo and bulk cargo piers, and the piers owned by private industries, including the facilities of the Bethlehem Steel Company at Sparrows Point. The Municipal Harbor Belt Line Railroad serves the Municipal Piers and provides the only rail connection to them, but cargo movement to these piers is amost entirely by lighterage.

60. **Railroad Distances to Competitive Ports.**—Baltimore is in a favored position, relative to competing North Atlantic ports, insofar as rail distances to interior points are concerned, although its trunk-line railroads must traverse routes with heavier



THE PORT OF BALTIMORE

RAILROADS SERVING BALTIMORE

KNAPPEN TIPPETTS ABBETT ENGINEERING CO
NEW YORK

DECEMBER 1949

PLATE 7

gradients and curves than some of those serving New York. Service to New Orleans from mid-western territories, on the other hand, follows fairly level, uncongested routes, permitting operating savings which have justified some reductions in freight rates to New Orleans.

RAIL DISTANCES

From	To Baltimore	To Philadelphia	To New York
Buffalo	404	406	390
Chicago	767	814	890
Cleveland	444	490	562
Louisville	688	772	852
Pittsburgh	313	360	426
St. Louis	891	964	1,040
Youngstown	378	424	500

61. **Switching Facilities.**—Switching facilities include those for the interchange of cars between the trunk-line railroads, accomplished through five trunk-line interchange points within the port area, and through local switching. Local switching facilities connect all of the lines within the Port with the exception of the Canton and Western Maryland railroads which are linked together by lighterage service.

Local switching has been found to be slow and expensive largely because of the widely dispersed port facilities. Lighterage and car floatage are largely used to supplement it.

62. **Yard Storage Facilities.**—Yard storage for the holding of cars in support of pier operations is consistent with good practice except in the case of that of the Western Maryland Railway. Some increase in yard storage capacity for this railroad is indicated, particularly to handle future increased commerce. Present facilities provide a capacity per berth of from 140 to over 200 cars from the trunk-line railroad piers.

STREETS AND HIGHWAYS

63. **State and City Highway and Street Improvement Programs.**—The existing network and proposed improvements to the State highway system provide well paved highways extending radially from the City of Baltimore to all important points (Plate 8). Connections are made with expressways leading to Washington and Philadelphia and with the Pennsylvania Turnpike. Upon completion of the state and county highway programs the system will be adequate for current needs.

The city streets in Baltimore have recently been improved under the current municipal public works program. This program is continuing and as it is completed traffic congestion will be relieved in the center of the city and in the port area generally.

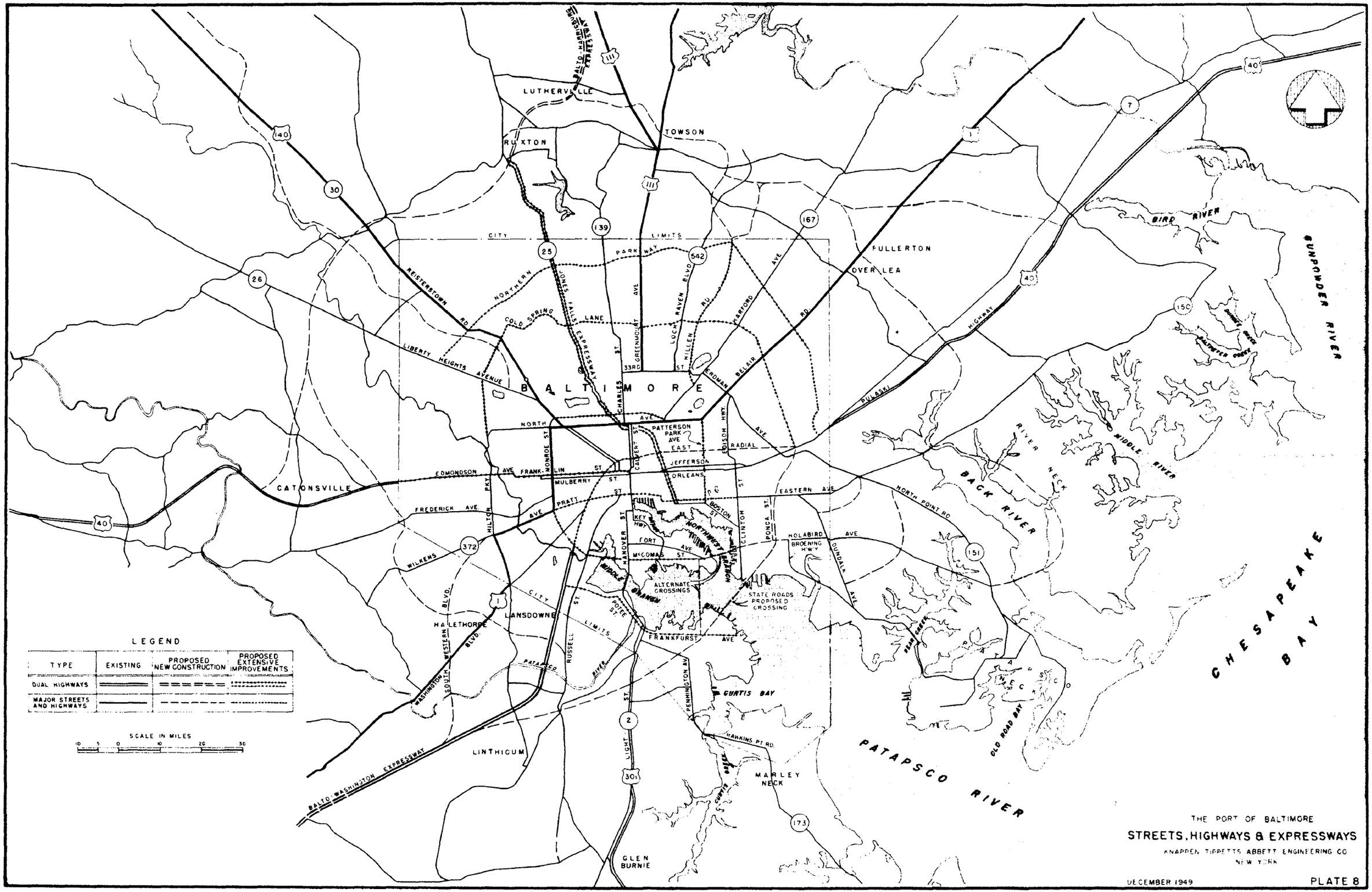
64. **Harbor Crossing.**—The City Planning Commission has developed a Master Transportation Plan which proposes expressways, parkways, and other street improvements. It includes a recommendation for a harbor crossing consisting of a tunnel from Canton to Locust Point connecting with a viaduct and bridge across the upper end of the Middle Branch as a continuation of McComas Street. A variation of this proposal would provide a tunnel from Canton to Locust Point and a bridge from Locust Point to Fairfield which would parallel the present Hanover Street Bridge. Both of these crossings are alternatives to a proposal by the State Roads Commission to cross from Canton to Fairfield, and are based on a traffic study which revealed that the major directional lines of east-west truck traffic are from Canton to Locust Point rather than to Fairfield and that north-south through traffic amounts to only 0.51 per cent of the total traffic in the city.

65. **Waterfront Access Streets.**—The waterfront of Baltimore Harbor is served by marginal streets and highways of various widths and types of pavement. Below Hawkins Point, highway facilities are adequate in general. In the Curtis Bay-Fairfield area lack of satisfactory surfacing slows traffic. The Port Covington terminal has satisfactory street approaches but McComas Street should be extended and paved and Andre Street should be widened. Locust Point has good approach streets but the roadway leading through the terminal should be straightened and widened.

Around the Inner Harbor there are wide marginal streets but the irregular surfaces of the pavements impede vehicular traffic. Elsewhere on the Northwest Branch of the Harbor the access streets to the piers are generally too narrow and are poorly paved. The presence of railroad tracks in the streets, the movement of trains and the practice of storing cars while waiting and during loading and unloading operations, restricts the movement of traffic. To correct these conditions there should be a wide marginal street near this waterfront, free of railroad tracks and grade crossings. The narrow feeder streets should be widened where practicable and repaved as indicated on Plate 6.

Boston Street and Clinton Avenue furnish access to the waterfront in the Canton area. Approaches to the Canton Terminal are now limited to two relatively narrow streets which are inadequate for the volume of truck traffic anticipated. To alleviate this condition Newgate Avenue should be extended in both directions to connect Clinton Avenue with the Broening Highway through the Canton Terminal.

Highways to Sollers Point are sufficient for present needs but additional improvements will be needed when this area is further developed.



LEGEND

TYPE	EXISTING	PROPOSED NEW CONSTRUCTION	PROPOSED EXTENSIVE IMPROVEMENTS
DUAL HIGHWAYS	═══	═══	═══
MAJOR STREETS AND HIGHWAYS	———	- - -	·····

SCALE IN MILES

10 5 0 10 20 30

THE PORT OF BALTIMORE

STREETS, HIGHWAYS & EXPRESSWAYS

KNAPPEN, TIPPETTS ABBETT ENGINEERING CO
NEW YORK

DECEMBER 1949

PLATE 8

SMALL BOAT HARBORS

66. **Proposed Small Boat Harbors.**—Yacht clubs and public moorings in Baltimore Harbor and Chesapeake Bay now provide limited facilities for yachts and small boats. It is estimated that there are 1,000 local craft and a transient trade of 4,000 vessels passing through the port district.

The desired characteristics for a small boat harbor demand a location easily accessible by land and water, designed for the protection of boats and with the convenience of facilities and services such as water, electricity and fuel. Two locations in Baltimore Harbor which could be adapted for this purpose are along the easterly side of the Municipal Airport and along the proposed new bulkhead paralleling Light Street in the Inner Harbor. The income to support a small boat harbor would be derived from berth rentals, service charges, concession leases, auto parking, etc. The National Association of Engine and Boat Manufacturers has estimated that the income to a port area for a stay of a month for a single vacationing yacht party averages $1,100. This is based on purchases of food, stores and clothing, restaurant expenses and entertainment. Such indirect benefits combined with the direct revenue qualify such a facility for further study.

A suitable small boat harbor for 500 inboard motor vessels ranging in length from 20 to 60 feet and 150 outboard motor boats of less than 20 feet would cost about $1,000,000. The annual cost of capitalization, operation and maintenance would amount to approximately $100,000. Since such a facility is a distinct adjunct of port activities it could be sponsored by a public agency having the responsibility for port development if action by private interests is not undertaken.

PRESENT ADMINISTRATION AND OPERATION OF THE PORT

67. **General Description.**—The administration, operation, and development of the Port of Baltimore has fallen largely on the railroads which own and operate the major steamship terminals. Various departments, bureaus and divisions of the City, State and Federal government exercise statutory jurisdiction over certain port activities but there is no central management of port affairs to control, coordinate or integrate their functions.

68. **Municipal Operation in the Port of Baltimore.**—The Bureau of Harbors of the City's Department of Public Works has the chief responsibility for the city owned wharves, piers and bulkheads. The Harbor Engineer, who heads the Bureau, is charged with the construction and repair of the city owned port facilities. The Harbor Engineer also operates the municipal radio station for the control of ships entering the harbor, directs the berthing and anchoring of ships, issues permits for construction in the harbor, performs certain maintenance dredging, conducts safety inspections of all piers,

supervises city owned marine equipment, controls pollution and operates the city owned drawbridges in the harbor.

Other bureaus of the Department of Public Works have functions and responsibilities within the port area similar in character to their normal official activities. These include the Bureau of Sanitation, Bureau of Sewers, Bureau of Highways, Bureau of Building Construction, and Bureau of Building Inspection. The Fire Department and the Police Department have special detachments to perform their assigned functions in the harbor area. Other bureaus and departments of the Municipal Government, including the Comptroller and the Commissioner of Finance, have various administrative and fiscal functions in the port; still others serve in an advisory capacity to the Harbor Engineer.

The Harbor Master, as agent for the Comptroller of the City of Baltimore, is responsible for maintenance of city owned pier sheds and similar structures, collects for wharfage and dockage at public owned piers and regulates the entry of vessels into public docks and anchorages. He also supervises the loading and unloading of vessels at public wharves and piers.

69. **Port Development Commission.**—In 1920 the Maryland State Legislature passed the Port Development Act to further the improvement and development of Baltimore Harbor. This Act authorized a $50,000,000 bond issue for the purchase of lands, properties and facilities and for the construction and improvement of wharves, docks and piers for public use and benefit. The Commission under this Act has power to institute condemnation proceedings for waterfront improvements within the limits of the Harbor, call upon Port or City bodies for assistance and to advise and intervene in any proceedings affecting the commerce of the Port.

The Port Development Act limits the use of the funds raised by the Commission by requiring that the Mayor and City Council must enter into binding contracts for the lease of the proposed improved facilities for ten years or more at an annual charge sufficient to cover debt retirement requirements and interest costs, before expenditures are undertaken. Thus, public funds have been amply safeguarded and judiciously used. But the overall effect as compared with the development activities in other ports where more liberal public financing obtains has been to deter the development of facilities in Baltimore.

The Port Development Commission has been handicapped not only by the restrictive financing provisions of the Port Development Act but also by the limitations of the Act which preclude the exercise of any administrative control over the completed facilities. The Commission is totally divorced by law from administrative, promotional and operational duties in the Port. This tends to limit its effectiveness despite the willingness and the capabilities of its membership to undertake greater responsibilities.

The Port Development Act should be liberalized to permit more flexibility in the development of the Port.

70. **Baltimore Harbor Advisory Board.**—This board was established in 1945 to collaborate with the municipal Bureau of Harbors, in investigating and reporting on matters vital to the efficient operation of the Port. The Board consists of local port, rail and shipping officials and maintains liaison with private, state and federal agencies which function in the Port.

71. **State and Federal Activities in the Port of Baltimore.**—The Governor and State Legislature exercise the usual statutory authorities over the Port and, through the several state agencies concerned, regulate the use of state waters, control pollution and regulate and control all fishing activities.

The Corps of Engineers, Department of the Army, engages in its normal functions under Rivers and Harbors Law and undertakes new construction and harbor maintenance in accordance with federal statutes. The Coast Guard, Customs Service, Public Health Service, Immigration and Naturalization Service, the Coast and Geodetic Survey and the Interstate Commerce Commission perform statutory functions in the port area.

72. **The Maritime Exchange, Baltimore Chamber of Commerce.**—This agency has undertaken ship reporting for the Port for almost fifty years and compiles records of local imports and exports from ship manifests.

73. **The Steamship Trade Association.**—Steamship operators and agents, stevedore companies, ship maintenance companies and ship ceilers comprise the membership of this association whose general purpose is promoting and improving the Port of Baltimore. It resolves disputes among its member organizations and often acts as labor mediator.

74. **The Baltimore Association of Commerce.**—Private agencies and associations interested in the port activities at Baltimore were combined in 1924 to form the Baltimore Association of Commerce for the purpose of unifying the promotion of port commerce, the development of industry in the area, the improvement of traffic and the protection of rail and steamship rates. This Association has been active and has provided a high quality of leadership in promoting commerce, in stimulating the development and use of the Port and the improvement of channels, anchorages and other facilities. It has been particularly successful in obtaining revisions of freight rate structures and terminal charges.

The Association operates branch offices in New York, Chicago and Pittsburgh to serve shippers and to promote the interests of the Port. It is supported largely by contributions from business and industry and also by annual appropriations both by the City of Baltimore and the State of Maryland. Its annual budget is in the order of $300,000.

CENTRAL PORT ORGANIZATION FOR BALTIMORE

75. **Purpose**—The administration, operation and development of the Port of Baltimore is at present handled by various departments, bureaus and divisions of the City, State and Federal governments as well as by public utilities and private interests. Their functions and duties frequently overlap and conflict, while deficiencies and omissions are also likely to occur. This results from a lack of legal authority, a shortage of port funds and a lack of centralized responsibility.

Experience in other ports shows that centralization of administration of those features and functions of the port which naturally belong under public management is essential. To enable the Port of Baltimore to maintain its present leading position it is desirable that a central port agency be created to take over the functions of certain existing bureaus and to integrate the activities of others. However, the private and quasi-public agencies now concerned with the betterment of the Port should not be supplanted.

76. **Current Trends in Port Administration.**—Most of the major ports throughout the world are operated by a centralized administrative organization, variously titled as Port Authorities, Dock Boards, Boards of Harbor Commissioners, and the like. Some of these organizations have functions limited to traffic matters and promotion of business. Others construct, own and operate port facilities including wharves, piers, warehouses, elevators and belt-line railroads.

All the established port administrative organizations have their functions defined in legislation which is generally expressed in the form of broad powers which include the right of eminent domain, the right to levy taxes, to sell bonds, to issue permits and franchises, to construct and operate facilities, to establish port charges and fees, to exercise regulatory powers over harbor activities and to represent the port before government commissions and boards.

Financial support by the state or municipality is generally necessary in the initial stages until the port administrative body establishes a basis of credit and controls income from various port activities to make its operations self-supporting.

77. **Typical Port Administrative Organizations in the United States.**—The Port of Boston Authority is managed by five commissioners appointed by the Governor with the advice and consent of the Council. The commissioners are not paid but receive expenses. The Port of New York Authority consists of twelve commissioners, six appointed by the Governor of New Jersey and six appointed by the Governor of New York. The commissioners receive no remuneration except expenses.

The Board of Commissioners in the Port of New Orleans is organized somewhat similarly to the Port Authorities of Boston and New York except that nominations for

appointment are made to the Governor by the Association of Commerce, Board of Trade, Clearing House Association, Cotton Exchange and Steamship Association. The Governor is required to make three out of five of the appointments from this list.

Generally, men selected for port commissioners do not hold other public office or positions of a political nature.

78. **Proposed Port District Commission for Baltimore.**—For the Port of Baltimore, there is recommended a central port administrative agency to be known as the Port District Commission. The establishment of the proposed Port District Commission would eliminate existing administrative deficiencies and would, through the grant of authorities and responsibilities additional to those now possessed by the existing public port agencies, make fully effective an agency capable of realizing the full potentialities of the Port. The Commission would be empowered to plan for the development and improvement of the Port, to finance and carry out neccessary improvements, and to exercise broad specific powers granted to it by the State and the City. In carrying out the public policies and objectives set forth in the legislation establishing the Commission, it would be freed of restrictive controls and of interference by other state and municipal bureaus and departments.

The Port District area, which it is suggested should be under the control of the Commission, is outlined on Plate 9. The various communities included in the District are those which have a common interest in the welfare of the Port and which are, to a large degree, economically dependent on the Port and the industries which are served by it.

The corporate powers which should be bestowed on the proposed Port District Commission include the right of perpetual succession, the right to sue and be sued and to adopt and use a common seal. The Commission would elect its various officers and appoint its own employees. It would be empowered to enter into contracts and to hire such services as it may require. It would acquire and mortgage property and dispose of property or grant the use thereof by franchise or lease, and also exercise the right of eminent domain. It could borrow money upon its own bonds or other obligations but could not in any way pledge the credit of the State or other political entities. It would establish its own procedures for doing business and excercise all powers not inconsistent with those reserved by the State and the port municipalities.

It would make or cause to be made surveys of business conditions and opportunities, freight rates and port services and take necessary steps to promote the commerce of the Port. It would conduct physical surveys and investigations and prepare plans for the modification, rehabilitation and improvement of port facilities. It would

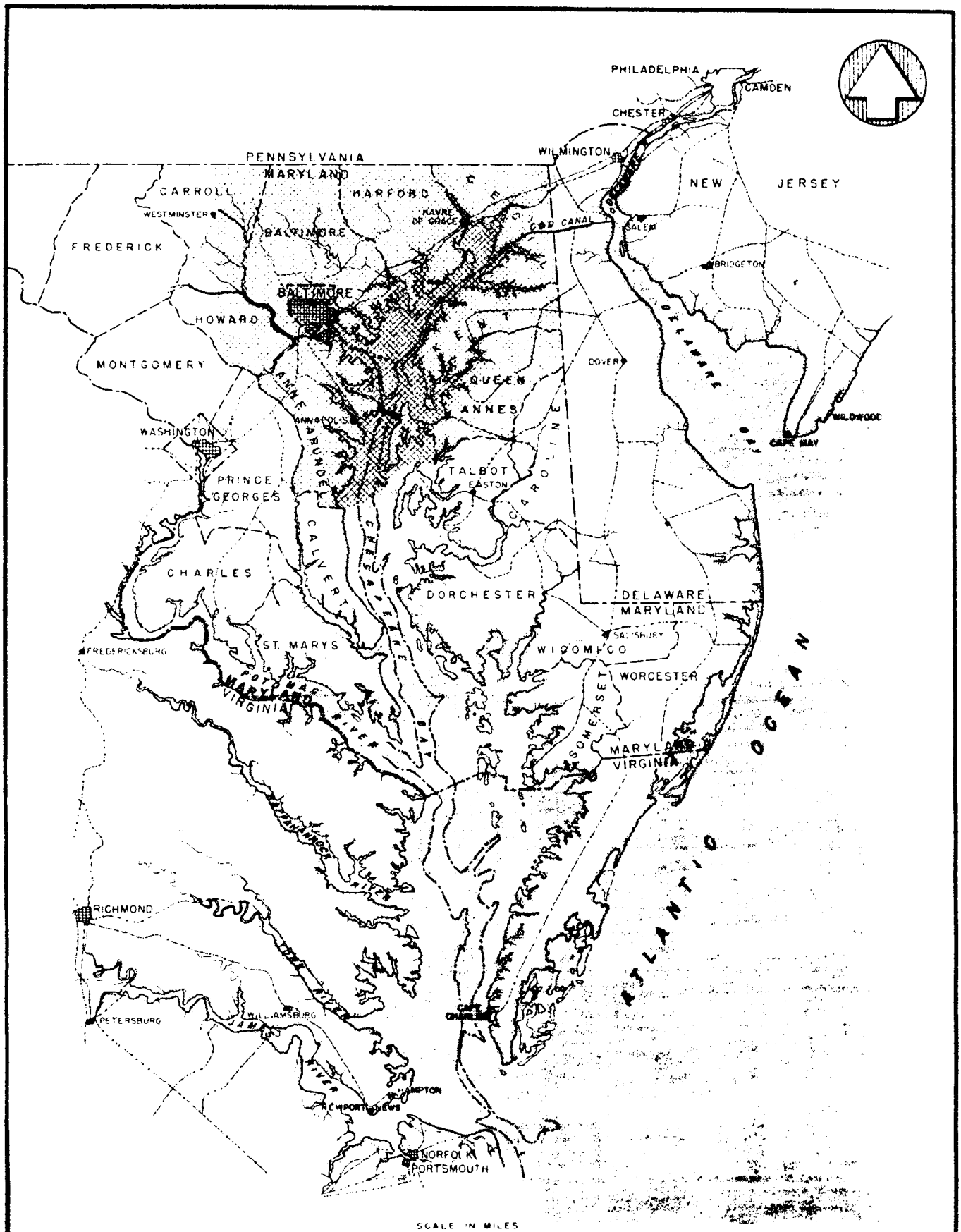
have representational powers before both state and federal agencies in all matters pertaining to the Port and to the transportation facilities serving the port area. It would own and operate equipment, piers, terminals, warehouses, etc., and would have authority to arrange for the design and construction of such additional equipment and facilities as it may require. Subject to the paramount authority of the Federal Government it would regulate navigation in the Harbor and the construction of structures in navigable waters, and would issue permits for the construction, alteration or removal of structures of all sorts. When found necessary and desirable, it could operate a Foreign-Trade Zone and establish an International House.

79. **Use of Existing Official Port Agencies as a Nucleus of the Proposed Commission.**—Study was given to the possibility of reorganizing and expanding one of the existing port agencies to undertake the broad responsibilities and functions of the proposed Port District Commission. The two major existing agencies, the Bureau of Harbors and the Port Development Commission were given particular consideration. At present the activities of the former are limited primarily to the performance of administrative functions and it has no authority for port development; the latter is concerned primarily with port planning and development under somewhat restrictive and outmoded legislation, and it is divorced entirely from administrative duties and responsibilities.

The reconstitution of an existing agency to serve as the basis for the proposed Commission would require complex corrective legislation. A clear-cut redefinition of duties and responsibilities would be difficult and there is a strong possibility that a central port administrative body so organized would be limited or conditioned in its perspective, and that its approach to the solution of current problems would be less imaginative than is desired and needed. Moreover, the freedom of action of those authorities responsible for implementing the necessary legislation and appointing the members of the proposed Commission would be restricted by the heritage of the agency being expanded which would not be the case if an entirely new organization were created.

It is concluded, therefore, that none of the existing agencies would serve as a convenient nucleus for the proposed central port body and that the establishment of a new agency, to be termed the Port District Commission, is the more effective solution and offers the greater assurance of success.

80. **Legislation Establishing the Proposed Port District Commission.**—The Port District Commission would not be given authority to usurp arbitrarily the functions of existing public and private agencies and organizations. Only those public bureaus and departments having responsibilities in the Port which would conflict with those of the proposed Commission would be directly affected by the establishment


PHILADELPHIA
CAMDEN
CHESTER
WILMINGTON
PENNSYLVANIA
MARYLAND
NEW JERSEY
GARROLL
HARFORD
WESTMINSTER
HAVRE DE GRACE
C & D CANAL
SALEM
FREDERICK
BALTIMORE
BRIDGETON
BALTIMORE
HOWARD
KENT
DELAWARE
MONTGOMERY
QUEEN ANNES
DOVER
WILDWOOD
CAPE MAY
WASHINGTON
ANNAPOLIS
PRINCE GEORGES
TALBOT
EASTON
CAROLINE
CHARLES
CALVERT
CHESAPEAKE BAY
DORCHESTER
DELAWARE
MARYLAND
SALISBURY
ST. MARYS
WICOMICO
FREDERICKSBURG
POTOMAC RIVER
MARYLAND
VIRGINIA
WORCESTER
SOMERSET
MARYLAND
VIRGINIA
ATLANTIC OCEAN
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PETERSBURG
JAMES RIVER
WILLIAMSBURG
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LEGEND
PROPOSED PORT DISTRICT
THE PORT OF BALTIMORE
PROPOSED PORT DISTRICT
KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK
DECEMBER 1949
PLATE 9

of the Port District Commission. The various functions now performed by individual railroads and the various private and quasi-public associations now operating in the port area would be continued generally as at present, in order that the initiative of private industry would be safeguarded and maintained for the welfare of the Port.

Legislation involving the establishment of the Port District Commission should be drafted by those familiar with constitutional law supplemented by a thorough knowledge of problems that will be encountered by a Port District Commission and the powers and responsibilities which should be bestowed on it to make its functioning effective and efficient.

81. **Organization of the Proposed Baltimore Port District Commission.**—The organization of the Commission would parallel that of a business corporation in that the Commission would have powers equivalent to those of a board of directors. The Commissioners would prepare or pass upon budgets, authorize capital expenditures, initiate new projects and generally manage the affairs and undertakings of the Port District in accordance with its legislative charter. The Commissioners would receive no compensation, but their expenses would be borne by the Port District. Endeavor should be made in the legislation to attract men of distinction and accomplishment in public life, business, labor, or in a profession. They should be free of political ties and commitments and prohibited from holding public office or any office in a political party or political organization. The Commission should consist of seven members appointed jointly and unanimously by the Governor, the Mayor and the President of the Baltimore Association of Commerce. Members should serve for a term of four years and their terms should be overlapping to permit continuity of policy and procedure.

Supporting the Commission there should be a well compensated staff whose members would be selected for their integrity and ability and should be free of political interference and themselves restrained from political activities. The employees should have continuous tenure of office and should be included within the state employees retirement system.

At the head of the staff (Chart 9) would be a General Manager selected by the Commission and subject to dismissal by it. He should be experienced in port administration and should be paid a salary commensurate with his duties. Needless to say, the choice in selection of the General Manager should embrace high qualifications of character, integrity, force and tact, as well as general competence and experience as an adminstrator and executive. An Assistant General Manager would be appointed to act as deputy and executive assistant to carry out routine duties and to act for the General Manager in his absence.

The departments under the proposed Commission could consist of Port Opera-

tions, Finance, Planning and Port Development, Engineering and Maintenance, Security, and Administration. The title designations given to these departments largely explain their functions. The various duties of the existing municipal bureaus and departments would be taken over by the new departments in the Port District Commission. The staffs in these agencies would be absorbed by the Commission.

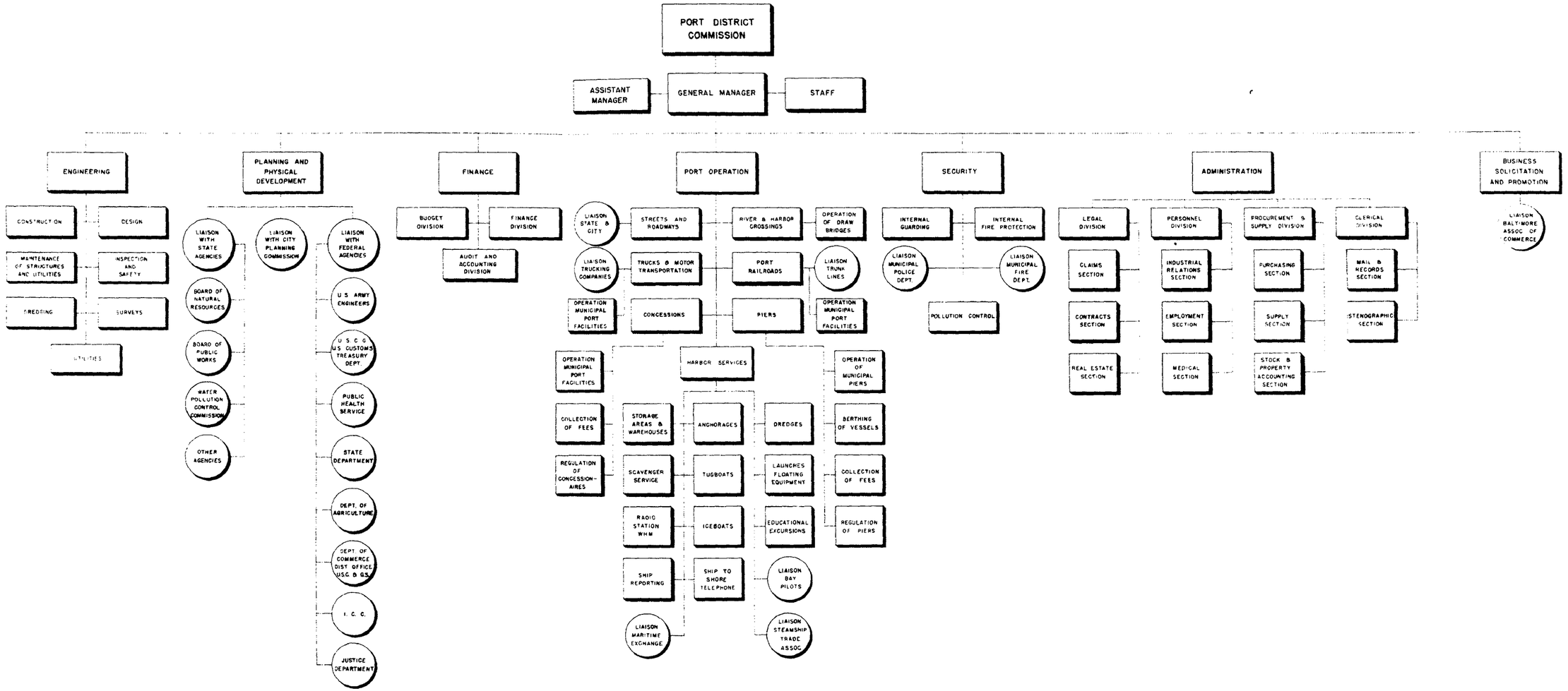
82. **Relationship of the Proposed Port District Commission to the Baltimore Association of Commerce and the Steamship Trade Association.**—The Baltimore Association of Commerce has been most successful in promoting the development of waterborne commerce in the Port. It should be retained in this capacity not only because of its well functioning organization for this purpose but also to insure continued interest by business men and other members of the Association in the welfare of the Port.

In order to coordinate the work of the Export and Import Bureau of the Association with that of the Port District Commission, it would be essential to maintain close liaison between the two agencies. This would also be necessary because it is contemplated that some of the financial support of the Bureau should come from the Commission. Accordingly, the Commission should be represented on the Board of Directors of the Association. If the Commission ever becomes the custodian or operator of extensive port facilities, consideration should then be given to the formation of a Department of Business Solicitation and Promotion within the administrative organization of the Commission.

The Steamship Trade Association has performed many valuable functions in the Port particularly in harmonizing relationships between the members of the Association and in mediating issues between labor and management. It may be expected that with the establishment of a strong Port District Commission with overall responsibility for the Port, the Association will be even more effective in carrying out its missions than in the past.

83. **The Future of the Port Development Commission and the Harbor Advisory Board.**—The Port District Commission would perform all the duties of the present Port Development Commission, hence there would no longer be any reason for the continuation of the latter. Under the new Commission, port development should keep pace with the demands and needs as they arise, inasmuch as it would be able with its rounded and expanded functions effectively to guarantee suitable facilities when additional business for the Port is solicited.

The functions of the Harbor Advisory Board likewise would be taken over by the proposed Port District Commission since there will be no need of a board acting in an advisory capacity with the establishment of the latter as it will contain in its membership representatives to perform this function. The liquidation of the Port Develop-



THE PORT OF BALTIMORE
ORGANIZATION CHART
PROPOSED PORT DISTRICT COMMISSION
KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
NEW YORK

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ment Commission and the Harbor Advisory Board in no way constitutes a reflection on their past performance.

The fact that the Development Commission has done such a splendid job over the years in the face of legislative handicaps is assurance that the proposed Port District Commission with its expanded power, authorities and functions will meet with a full measure of success.

FINANCING THE DEVELOPMENT OF THE PORT

85. **Administration, Operation and Maintenance Costs.**—The proposed Port District Commission, in its initial years, will have placed on it the heavy responsibility of keeping the Port of Baltimore in a leading position. It is estimated that, during the early stages of operations, its annual operating or expense budget will be close to $700,000 and its annual revenue derived from piers, concessions, and services will be approximately $350,000. The annual budget of the Proposed Commission does not include funds for rehabilitation and construction.

86. **Financing Administration, Operating and Maintenance.**—Initial financing will require the appropriation of public funds. The monies now appropriated to the several municipal and state agencies to carry out their duties within the Port would, in effect, be assigned to the proposed Commission and would constitute a considerable portion of the funds required by that Commission to supplement its income from piers, concessions and services. In subsequent years, as the credit of the Commission is established and revenues and returns are reasonably assured, it is expected that the Commission would be self-supporting. Expenditures for the promotion and solicitation of business will probably have to be borne as now by contributions from interested private agencies and by public appropriations from the City of Baltimore and State of Maryland. These may be supplemented by funds that the Port District Commission itself can make available.

There are many benefits to the port community directly related to the volume of commerce handled in the Port. These direct benefits for the Port of Baltimore for the year 1947 are estimated to have exceeded $100,000,000. Total benefits, direct and indirect, resulting from the expenditures of wages and the circulation of money accruing from port activities are estimated at more than $200,000,000 annually. Over 100,000 persons in the area of the proposed Port District are dependent on the Port either for direct employment or for employment in related activities and, in addition, several hundred thousand persons are indirectly dependent on the Port and allied industries for a large measure of their income. These widespread benefits justify the need for financial support of such necessary port activities as cannot be covered by direct income in the form of returns collectible through the assessment of charges and fees.

87. **Financing Port Improvements.**—There is a heavy backlog of work necessary to make the Port fully modern and up-to-date in all respects. The rehabilitation of facilities and equipment and the construction of new facilities is now necessary if the Port is to retain its leading position in the future.

Three methods of financing the recommended improvements are available, and of each of these there are numerous variations, all of which should be explored in carrying out the recommended plan of improvement. The three methods are:

(a) Financing by private capital.

(b) Financing by private interests with the assistance of public funds.

(c) Acquisition and improvement or construction of port facilities with public funds and subsequent operation as a public enterprise.

88. **Financing of Port Improvements by Private Capital.**—Since the port facilities in the main are privately owned, it is apparent that the private financing of port improvements, betterments and additions would be undertaken only if the owners were convinced that they would be directly benefited thereby. There is evidence that the pier owners are not now convinced that the advantages in undertaking the proposed improvements at present justify the expenditures recommended. They state that when there is justification they will make the capital expenditures required by the improvements then needed.

89. **Financing of Port Improvements by Public Funds Assistance.**—Failure by the owners to make the improvements of their facilities generally along the lines recommended will result in the Port of Baltimore lagging behind the competing ports which are now handling a substantial volume of commerce which by-passes Baltimore. Current aggressive action by competing ports in undertaking improvements and promotion will result inevitably in further direct trade losses to Baltimore and the further diminishing of its ability to participate in the increased movement of goods that will attend the expansion and development of its trade area. The public's interests and its dependence on the Port do not permit letting these needed improvements go in default. Hence means of financing them must be found. The assistance to the private interests, who of themselves are not convinced of the urgent need of a port improvement program, by making public funds available for financing the cost of such improvements, offers opportunity for collaborative effort. Methods of extending such assistance might include:

(a) Lease of railroad piers by a Port District Commission and their alteration, expansion and enlargement at public expense and their operation by the Port District Commission in the best interests of the shippers, steamship companies, railroads and truckers.

(b) Loan of public funds on an agreed basis to private interests for the purpose of improving and extending facilities.

(c) Grant of public funds to private interests to improve facilities.

The lease of the majority of general cargo piers and their operation by the Port District Commission (Method a) would permit uniform practices throughout the Port on railroad and non-railroad owned facilities in the matter of terminal charges and cargo handling methods. It would permit better scheduling of berths for vessels, possibly preferred berthing arrangments or leasing of piers by steamship companies.

The loan of public funds to private operators (Method b) as a matter of procedure could be undertaken at the present time under the Port Development Act. Prior to making loans an agreement should be reached between the parties of interest both as to necessity and as to scope of improvements in each case. Such agreements it is believed could not be reached unless the terms of financing are liberal. Therefore the provisions of the existing Port Development Act at Baltimore will probably have to be relaxed if extensive improvements are to be undertaken. Under this method the interests using the improved piers and port facilities should be safeguarded by suitable contractual arrangements to insure adequate facilities and services at economical rates for their needs.

The merits of arrangements (a) and (b) could be extensively set forth as could the drawbacks and shortcomings of each. Each may have applicability and should be considered by the Port District Commission and by the port interests concerned when occasion arises for use of public funds for port improvements and each resorted to as circumstances may warrant. For these reasons no generalized summary of the good and bad features of the two methods of financing of the port seems in order, at present.

The grant of public funds (Method c) appears both unwise and unwarranted by present circumstances. Nevertheless, failing other methods, subsidy or methods involving combinations of financing with subsidy as a feature should be considered.

90. **Acquisition of Port Facilities by the Port District Commission.**—If the methods of assistance described above fail then consideration should be given in the public interest to the exercise of more drastic methods to attain the necessary ends. The procedure which could be followed by the Port District Commission might be any of the following:

(a) Acquire essential terminals and piers by lease or purchase and then either operate the improved facilities as a public enterprise by the Port District Commission or lease the improved facilities for operation under contractual arrangements that would safeguard the interests of all concerned.

(b) Construction of competitive facilities to insure adequate, efficient and economical service.

Of these approaches the second one (b) is the less desirable and moreover would be unnecessary if adequate statutory authority is given the proposed Port District Commission to enable it to undertake the actions described in (a). This authority must be vested in the proposed Port District Commission or similar agency if the Port of Baltimore is to serve the public which now depends so vitally on the capabilities of the Port to serve adequately the tributary trade area.

91. **Procedures for Financing Port Improvements with Public Funds.—** A workable procedure for the public financing of port improvements has been established by the Port Development Commission in the construction of the McComas Street Terminal, the Municipal Fruit Terminal at Pier One, and a modern terminal for the National Gypsum Company. Financing in all cases was carried out successfully and returns on the Commission's investments have been sufficient to cover debt service charges.

However, the amortization requirements established in the legislation under which the Port Development Commission operates have been found restrictive and it has not had the effect of stimulating the use of public funds to carry out essential improvements. For example, although the Port Development Commission for some years has had legislative authority to raise additional funds through the issuance of bonds in the amount of $10,000,000, there has been no demand for the public financing of desirable facilities by agencies which could guarantee the debt service requirements.

Consideration should be given to revising the legislation setting up the Port Commission funds in order to make their use more attractive. The degree of amortization might be modified to require less than a 100% refund. Provisions for the borrowing agency to acquire full possession of the facilities upon completion of amortization should also be contemplated. Care must be exercised to insure that the terms of financing of future public port improvements are designed to protect outstanding bond issues and provision should be made for their refinancing by the proposed Port District Commission when advantageous rates make such action advisable.

The successful experience in financing improvements in Baltimore makes it unnecessary to discuss the techniques involved in the issuance of bonds, the determination of types of bond issues, amortization periods, rates of interest, and the like.

CONCLUSIONS AND RECOMMENDATIONS

As a result of this survey the following conclusions have been drawn and recommendations made regarding the major factors affecting the development of waterborne commerce in the Port of Baltimore and the steps which should be taken to maintain and improve its position as a leading United States port.

92. **Conclusions.**—Industry in the Baltimore area is healthy and thriving. It has been and will continue to be a most important stabilizing influence on the overall economy of the Port.

The Port is well served by foreign, coastwise and intercoastal shipping. The development of direct sailings would aid in increasing the volume of general cargo business of the Port. It would also benefit materially if services provided by exporters, shipping agents, brokers and international bankers were established in Baltimore in greater numbers.

There is more than a sufficient number of tugs, barges, lighters, cranes and other floating equipment in the Port. Harbor policing and drift removal is well taken care of. Due to its age the ice-breaker **Annapolis** should be repaired and an additional ice-breaker provided.

The service rendered by the railroads has been one of the outstanding influences in the growth of the Port of Baltimore. They have been largely instrumental in developing the bulk cargo commerce. The railroad lines cover amply the tributary area of the Port. The rail switching facilities in Baltimore are excellent for line-haul traffic interchange but are limited in usefulness for local switching largely because of the time delays involved in intra-port movements. The extensive use of lighterage overcomes this deficiency. Reciprocal switching would probably not be the ideal solution to the problem. It is not believed to be the most pressing need to improve the port situation at this time. Yard storage capacity of the Western Maryland Railway should be increased. Nothing should be included in future plans for port development which will discourage the efforts being made by the railroads on behalf of the Port of Baltimore.

The total volume of waterborne commerce in the Port of Baltimore compares favorably with that of other United States ports. Its continued growth is assured if port facilities and services are maintained at a level equal to or better than that of competing ports. The volume of commerce passing through Baltimore is predominantly bulk cargo. Maximum advantage, therefore, lies in developing greater volumes of general cargo commerce. About 2,800,000 tons of foreign general cargo carried by railroads bypassed this Port in 1947. Continued solicitation and promotion supplemented by excellent physical facilities could obtain some of this commerce for

their loans and the limited and indefinite provisions covering renewal of leases have discouraged the use of their funds by private interests.

The Port promotion program of the Baltimore Association of Commerce is an effective, practical one and should be continued and expanded. The branch offices of the Association are a valuable part of this program, which is essential to maintain and increase the volume of waterborne commerce at Baltimore.

93. **Recommendations**

1. The port promotion and development activities of the Baltimore Association of Commerce should be maintained and given full support by all agencies interested in the welfare of the port area.

2. Continued effort should be made to increase the number of direct steamship sailings between Baltimore and foreign ports.

3. The main navigation channel in the harbor from deep water to Fort McHenry should be widened to 800 feet. The connecting channel between the Main Channel and the Inland Waterway should be widened at the present time to at least 500 feet and deepened to 35 feet. The Chesapeake and Delaware Canal should be improved immediately to provide a bottom width of at least 350 feet and a depth of 32 feet. Low level highway bridges over the canal should be eliminated or reconstructed providing horizontal clearances of 500 feet. The railroad bridge should be a vertical lift type. Sharp bends should be eliminated and additional anchorage facilities along the canal should be provided.

4. Anchorage No. 3 should be extended and deepened to 35 feet and representations to this effect should be made to the Baltimore District Engineer.

5. Repairs should be made to the icebreaker **Annapolis** and an additional icebreaker should be provided as soon as possible.

6. The general cargo piers of the Port should be improved and expanded to include:

a. Provision of new access roads, transit sheds, and cargo handling equipment at the Lower Canton piers.

b. Provision of better ship and truck accommodations at the Pennsylvania Railroad piers.

c. Provision of better access road and truck accommodations at the Locust Point piers.

d. Provision of better truck access at the McComas Street piers.

e. Reconstruction of the Municipal Piers on Pratt Street.

f. More extensive use throughout the Port of mechanical cargo handling equipment.

7. A new pierside storage warehouse should be provided concurrently with general cargo pier improvement and expansion at the Canton Company Retainer Pier, Pennsylvania Railroad Pier 6 and the McComas Street Terminal.

8. A central ore terminal to be served by two or more railroads should be developed to place Baltimore in a position to capture a major share of the impending growth in foreign iron ore importation and thus also to attract additional steel manufacturing.

9. A detailed study should be made of the demand for and practicability of a small boat harbor.

10. The marginal streets and highways serving the waterfront should be improved to provide better truck access to the piers.

11. Continued effort must be made to protect the favorable advantages which Baltimore now enjoys in railroad freight rate differentials.

12. Free time for truckborne cargoes should be extended to five days for both imports and exports.

13. Free time on cargoes brought in by rail for export should be increased to ten days.

14. More liberal privileges in the handling of split-export-car-deliveries and storage during transit, both import and export, should be granted by the railroads to shippers using the Port of Baltimore.

15. Handling charges for cargoes moved by rail should be made uniform at both privately owned and railroad owned piers.

16. A detailed, cooperative study should be made by the railroads, steamship lines and truckers as to the advisability of imposing dockage charges at railroad owned or operated piers in order to provide a new source of income to aid in financing needed pier and terminal improvements.

17. Action towards the development of a Foreign-Trade Zone should be deferred.

18. No action should be taken at this time towards the organization of an International House or Trade Mart.

19. A central port agency, designated as the Baltimore Port District Commission, should be created and authorized to assume responsibility for port development and improvement, construction and operation of authorized facilities, and the protection and development of commerce.